A. I. A. File Number 25

CYCLOPEDIA
OF PAINT INFORMATION

NATIONAL LEAD COMPANY

A. I. A. File Number 25

CYCLOPEDIA
OF PAINT
INFORMATION

NATIONAL LEAD COMPANY

NEW YORK
111 Broadway

BOSTON
131 State Street

CHICAGO
900 West 18th Street

BUFFALO
116 Oak Street

CINCINNATI
659 Freeman Avenue

CLEVELAND
820 West Superior Avenue

ST. LOUIS
722 Chestnut Street

SAN FRANCISCO
485 California Street

PHILADELPHIA
John T. Lewis & Bros. Co.
437 Chestnut Street

PITTSBURGH
National Lead & Oil Co. of Pa.
316 Fourth Avenue

127-26

Introduction

THE long established popularity of the "Handbook on Painting" attests the value of the information it contains. The size and format of the pocket-size volume, however, while ideal for use on the job or in the home, renders it inconvenient for filing. The present volume, containing the same information under the title, "Cyclopedia of Paint Information", is intended for the office.

The contents are classified and carefully cross-indexed to make the facts easily and quickly available for reference.

The Cyclopedia is not intended to take the place of specifications. Complete standard specifications for painting with white-lead and with red-lead, fully indexed and annotated, are available upon request.

CHAPTER I
Exterior Wood Painting

The right prescription for exterior painting on wood is an old one—simply pure white-lead thinned to painting consistency with pure linseed oil. Nothing has yet been found to equal this combination. It gives the best protection and decoration at the least outlay.

Because it is mixed to order, lead-and-oil paint can be adapted to meet all surface and weather conditions. It can also be varied in color from pure white to any desired shade and tint (except the very dark colors) by the addition of the proper tinting materials.

Paint made of pure white-lead and pure linseed oil forms a tough, tenacious film that never scales off, but wears down smoothly. When the time comes to paint again, no expensive preparation is necessary. Often substitutes offered for pure white-lead leave the surface so rough and scaly that it not only looks bad, but requires the use of the gasoline torch to smooth it down before repainting. This preparatory work takes time and costs money, which of course must be added to the original cost of those substitutes before they can be compared in price with pure white-lead and linseed oil.

It never pays to use cheap paint. Even the best paint is a minor item in the whole cost of a painting job. Labor is the chief item. Therefore, it is false economy to spend money and time in applying paint which will crack and scale off in ugly splotches, allowing the weather to attack the surface underneath.

Dutch Boy white-lead is the highest grade white-lead that can be made. It is pure, finely ground, smooth, excellent in spreading and hiding properties—a superior paint material. We urge you to try it just once; we know it will hold your favor by its merit.

Dutch Boy white-lead is on sale in all reliable paint stores and is used by first-class painters everywhere. It comes in 12½, 25, 50 and 100 pound steel kegs and one and five pound tins. Our famous trademark, the Dutch Boy Painter, is on every keg and tin and is your protection against substitutes.

All formulas in the Cyclopedia which call for pure white-lead are based on the use of Dutch Boy white-lead.

How Much Paint? Easy Method. For those who do not wish to go to the trouble involved in figuring out the measurements of a building in detail and who are content to know the approximate amount of paint needed, the following method will suffice.

First measure the girth of house in feet and multiply by height in feet to eaves. If there is a gable, multiply width of gable in widest place by half the height of gable in highest place. Add the quantities and divide result by 600 (approximately the number of square feet one gallon of white-lead paint will cover).

This gives the number of gallons of paint needed for the body of house, one coat.

Multiply the number of gallons thus found by the number of coats you wish to apply. The result is the total gallons of paint you will need.

If a house has only medium trim (window frames 4 inches wide or less, cornice about 9 inches extension, porch posts rather slender), count 2/5 gallon or 3 1/5 pints of paint for every 100 feet of trim. If trimming is of more massive style (say window frames six inches, heavy veranda pillars 30 inches in circumference), figure 3/5 gallon or 4 4/5 pints to every 100 feet.

For every gallon of paint you will need the following quantities of ingredients:

Dutch Boy white-lead.....	14 pounds
Pure raw linseed oil.....	½ gallon
Pure turpentine	1/7 pint
Pure drier	1/7 pint

How Much Paint? More Accurate Method. The exact area to be painted and the quantity of paint needed can be ascertained by employing the detailed rules below. If approximate calculations will do, follow the quicker method of figuring described in preceding paragraphs.

To calculate the square feet in one end, multiply height from foundation to eaves by width.

In diagram (below): 20 (height) × 24 (width) = 480 square feet.

Multiply by 2 to get number of square feet in both ends, or in this case, 480 × 2 = 960 square feet.

To calculate the square feet in one side, multiply height from foundation to eaves by length.

In diagram: 20 (height) × 30 (length) = 600 square feet.

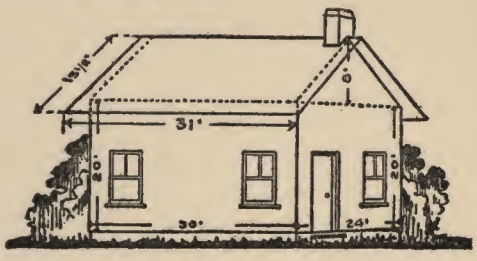
Multiply by 2 to get number of square feet in both sides, (in this case 600 × 2 = 1200 square feet).

To calculate the square feet in gable, multiply one-half the height of gable by distance between eaves.

In diagram: 4 feet (½ of 8 feet, height of gable) × 24 feet (distance between eaves) = 96 square feet.

If there is another gable of the same shape and size, multiply by 2 to get the number of square feet in both gables, (in this case 96 × 2 = 192 square feet.)

When gables differ considerably in size they must be measured separately and the results added together to get the number of square feet in all the gables.



Add square feet in ends, sides and gables and the sum is the number of square feet of surface to be painted.

In diagram: 960 + 1200 + 192 = 2352 square feet to be painted.

If roof is to be painted, the paint will probably differ from that used on the body of the house and the measurements should therefore be kept separate.

Multiply length by distance from comb of roof to gutter.

In diagram: 31 (length) × 15½ (distance from comb of roof to gutter) = 480½ square feet.

Multiply by 2 to get the number of square

feet in both sides of roof (in this case 480½ × 2 = 961 square feet).

The preceding directions can easily be followed where the building is regular in shape like a box.

Occasionally, however, a building has irregular lines. In most cases of this kind, to lay down a set of rules for measuring would be to inflict unnecessary and confusing detail. If there is a large wing, figure the wing as if it were a separate building, but allow of course for painting only three sides. If the house is very irregular or confusing we suggest the use of the short cut described on page 5.

Square Feet to a Gallon. In figuring the number of square feet a gallon of white-lead paint will cover, a great deal depends upon the surface to be painted; that is, the kind of wood, whether it is very dry or not, whether the surface is rough or smooth, etc. Some wood is more porous than others and consequently absorbs more paint. Much depends, too, upon the way the paint is brushed out. Some painters brush the paint out more and thereby cover more surface than others.

The priming coat mixed according to instructions given below will cover, on the average, 575 square feet to the gallon, one coat. Second and third coats on new work and first and second coats on old work will cover, on the average, 600 square feet to the gallon, each coat.

How Many Coats. Three coats should always be applied to a surface which has never before been painted—a thin priming coat and two heavier coats. (See formulas 1, 2 and 3, following.) Two coats are sufficient for repainting old work. (See formulas 4 and 5.) Two coats on new work is false economy. A third coat would cost only one-third more and would make the job last twice as long.

***Mixing the Paint.** The steps to be taken in mixing white-lead paint are:

1st. Take the proper amount of white-lead required by the directions which follow. "Break up" or soften it in a large pail with just enough oil to bring it to a workable paste. Use a wooden paddle to stir.

2nd. Add tinting colors, if the paint is to be tinted, mixing them thoroly into the white-lead.

3rd. Put in drier. Stir thoroly.

4th. Add the remainder of the oil required by the formula. Stir thoroly.

5th. Put in the turpentine.

Stir until the whole mass is thoroly mixed. Strain thru wire or cloth screen. The paint is now ready to apply.

Painting New Outside Wood. (*Note:* The following formulas are for white paint. For tinted paint see pages 8 and 9.)

For the first or priming coat on new, unpainted outside wood the paint should be thin. Use the following:

Formula No. 1—Priming Coat

(*New Outside Wood*)

100 pounds Dutch Boy white-lead
4 gallons pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

This formula makes 9 gallons of paint which should cover about 5,175 square feet, one coat.

Note: The painter may exercise his own discretion in using a larger or smaller quantity of oil according to whether the wood is oil-absorbing, such as white pine, poplar and basswood, or less permeable, such as yellow pine, cypress, spruce and hemlock. The painter may find it advisable, in rare cases, to increase the quantity of turpentine for extremely sappy or resinous woods. Where this is done a corresponding decrease should be made in the specified amount of linseed oil.

Raw linseed oil with drier is somewhat better than boiled linseed oil for making paint to be used on outside wood, but boiled linseed oil without drier may be used if desired. The results will be quite satisfactory.

Formula No. 2—Second Coat

(*New Outside Wood*)

100 pounds Dutch Boy white-lead
1½ gallons pure raw linseed oil
1½ gallons pure turpentine
1 pint pure drier

The preceding formula makes 6 gallons of paint which should cover about 3,600 square feet, one coat.

Formula No. 3—Third Coat

(*New Outside Wood*)

100 pounds Dutch Boy white-lead
3½ to 4 gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

This formula makes 6½ to 7 gallons of paint which should cover about 3,900 to 4,200 square feet, one coat.

Repainting Outside Wood. Paint intended for wood which has been painted before should be mixed differently from that intended for new work.

Two coats are enough on old work, for the old paint serves as a priming coat.

First touch up all defective places with paint mixed according to formula No. 4 and then apply two coats as follows:

Formula No. 4—First Coat

(*Repainting Outside Wood*)

100 pounds Dutch Boy white-lead
2 gallons pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

This formula makes 7 gallons of paint which should cover about 4,200 square feet, one coat.

Formula No. 5—Second Coat

(*Repainting Outside Wood*)

100 pounds Dutch Boy white-lead
3½ to 4 gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

This formula makes 6½ to 7 gallons of paint which should cover about 3,900 to 4,200 square feet, one coat.

Paint Ingredients in Tabular Form. For convenience and for ready reference the previous facts are tabulated on the next page.

*There are many jobs around the house which require a comparatively small quantity of paint. For jobs of this kind, see simplified directions for making white-lead paint given on page 31.

Table A—(New, Unpainted Outside Wood)

Ingredients	*Priming Coat*	*Second Coat*	*Third Coat*
Dutch Boy white-lead.....	100 pounds	100 pounds	100 pounds
Pure raw linseed oil.....	4 gallons	1½ gallons	3½-4 gallons
Pure turpentine	2 gallons	1½ gallons	1 pint
Pure drier	1 pint	1 pint	1 pint
How much paint it makes.....	9 gallons	6 gallons	6½-7 gallons
Square feet it should cover.....	5,175 sq. ft.	3,600 sq. ft.	3,900-4,200 sq. ft.

Table B—(Repainting Outside Wood)

Ingredients	*First Coat*	*Second Coat*
Dutch Boy white-lead.....	100 pounds	100 pounds
Pure raw linseed oil.....	2 gallons	3½-4 gallons
Pure turpentine	2 gallons	1 pint
Pure drier	1 pint	1 pint
How much paint it makes.....	7 gallons	6½-7 gallons
Square feet it should cover.....	4,200 sq. ft.	3,900-4,200 sq. ft.

Table C—(Quantities of Each Material Required for Mixing One Gallon of Paint)
(New Outside Wood)

Ingredients	*Priming Coat*	*Second Coat*	*Third Coat*
Dutch Boy white-lead.....	10 pounds	15 pounds	15 pounds
Pure raw linseed oil.....	4 pints	2 pints	4 pints
Pure turpentine	2 pints	2 pints	⅛ pint
Pure drier	⅛ pint	⅛ pint	⅛ pint
Square feet it should cover.....	575 sq. ft.	600 sq. ft.	600 sq. ft.

(Repainting Outside Wood)

Ingredients	*First Coat*	*Second Coat*
Dutch Boy white-lead.....	15 pounds	15 pounds
Pure raw linseed oil.....	2¼ pints	4 pints
Pure turpentine	2¼ pints	⅛ pint
Pure drier	⅛ pint	⅛ pint
Square feet it should cover.....	600 sq. ft.	600 sq. ft.

Painting Porch Floors. Porch floors require protection against moisture from the damp space beneath the porch. This space is frequently left without sufficient ventilation. If the soil is damp the porch floor cannot help absorbing a great deal of moisture, which is almost certain to cause blistering and peeling. To prevent trouble of this sort give the underside of the floor, also the tongued and grooved edges of the boards, whether soft or hard wood, a coat of paint mixed as follows:

Formula No. 6
(Underside Porch Floors)

66 pounds Dutch Boy red-lead
34 pounds Dutch Boy white-lead
5 gallons pure raw linseed oil
1 gallon pure turpentine
¼ pint pure drier

This formula makes 8¾ gallons of paint and should cover about 5,250 square feet, one coat.

Preparing the Surface. The same precautions must be taken in preparing to paint a floor as in the preparation of any other surface. If the floor has old paint that is rough and scaly or thick and gummy it should be cleaned down to the wood either by scraping, planing, burning or by the use of a liquid paint remover. If the last method is used the surface must be brushed afterwards with a coat of strong vinegar to destroy any trace of the alkali in the remover. Make sure that every part of the floor is firm and solid. There should be no spring to it when stepped on. After sandpapering and cleaning, the floor is ready for painting.

Priming Soft Wood Floors. If the floor is of white pine, poplar, hemlock, or other very soft woods, use the following:

Formula No. 7—Priming Coat
(Soft Wood Floors)

100 pounds Dutch Boy white-lead
4 gallons pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

This formula makes 9 gallons of paint which should cover about 5,400 square feet, one coat.

In applying use a full brush of paint and brush out well. One cause of stickiness on floors is flowing the paint on so thick that it does not dry thoroly underneath, and then hurrying too much with the other coats.

After the priming is dry, all joints, cracks, nail holes, and other defects should be filled with a good putty.

The putty should be firmly pressed into the joints and smoothed over with a putty knife. When entirely dry, sandpaper carefully to remove any surplus.

Priming Hard Wood Floors. New hard wood floors—oak, maple, ash, yellow pine, walnut (all less absorbent than white pine or hemlock)—are not often painted, but when it is desired to paint them with white-lead, use less oil and more turpentine. The following formula is a good one:

Formula No. 8—Priming Coat
(Hard Wood Floors)

100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
4 gallons pure turpentine
1 pint pure drier

This formula makes 10 gallons of paint and should cover about 6,000 square feet, one coat.

The priming coat is always the most important. A first-class foundation saves material and labor in repainting.

Body and Finishing Coats. For the body or second coat, whether on new work or old, regardless of the variety of wood, use the following:

Formula No. 9—Second Coat
(*Hard and Soft Wood Floors*)

100 pounds Dutch Boy white-lead
1 gallon pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

This formula makes 6 gallons of paint and should cover about 3,600 square feet, one coat.

For the finishing or third coat:

Formula No. 10—Third Coat
(*Hard and Soft Wood Floors*)

100 pounds Dutch Boy white-lead
1 gallon pure raw linseed oil
1½ gallons pure turpentine
½ gallon floor varnish
½ pint pure drier

This formula makes 6 gallons of paint and should cover about 3,600 square feet, one coat.

For porch floors a varnish should be used that will withstand exterior exposure.

Two things to keep in mind thruout the work are: first, vigorous brushing to spread out each coat to the utmost; second, allowing each coat at least four days to dry.

What Colors to Use. Colors suitable for a porch floor are various grays, such as slate, stone or lead colors, and greens or browns. The grays may have a touch of red yellow to counteract their natural coldness. The greens may run from light olive to dark olive or in some cases to bronze green. The browns may range from terra cotta to chocolate brown or even darker.

Personal taste, exposure to sunlight, and harmony with adjacent colors are factors that should help determine the color chosen.

Colored Exterior Paint. All formulas given so far in this book make white paint. Where colored paint is wanted, it can be secured simply by adding tinting colors according to the shade or tint desired. These tinting colors are known as "colors-in-oil" and can be bought from any dealer who handles paint materials.

There is scarcely any limit to the number of shades and tints obtainable by coloring white-lead paint but only shades and tints of certain colors are desirable for exterior painting. Formulas for making some of these colors are given on this page and on page 9. Any of the colors listed can be varied indefinitely simply by increasing or decreasing the amount of tinting materials specified.

Most of the color formulas given call for the use of two or more tinting materials, but it should be remembered that simpler colors may be obtained by the use of one coloring pigment. Mixed with white-lead, varying quantities of lampblack will produce a pleasing range of grays, chrome yellow will produce yellows, chrome green will produce greens, chinese blue will produce blues, venetian red will produce pinks, and so on. See page 31.

Formulas for colored paint are at best always only approximate as some allowance must be made for slight variations in the strength and tone of different manufacturers' colors. Chrome yellows and ochres, for example, vary quite noticeably both in strength and tone.

All formulas for colored paint in the Handbook on Painting are based on the use of John T. Lewis & Bros. Company's colors-in-oil (Dutch Boy brand). These colors or other highest grade colors should be used. Cheap colors-in-oil lack tinting strength, fade out and never give satisfaction in any particular.

As explained under "Mixing the Paint" on page 6 the tinting colors should be added to the white-lead before the paint is thinned to painting consistency. Never put in all at once the entire quantity of colors called for. Weigh out the color and put it in gradually, noting the effect. Stop when the desired shade or tint is arrived at, even if the formula calls for more. So also, if the color is too light, add a little more tinting matter until the color is exactly right.

Where tinting colors are used in sufficient quantity to alter the consistency of the paint, add ½ pint of linseed oil and turpentine (combined) to each pound of coloring material. The proportion of the turpentine to linseed oil should follow the particular white-lead formula being used.

For example: To make "Yellowish Tan" according to formula below requires about 21 pounds of colors-in-oil to each 100 pounds of white-lead. Therefore, add 10½ pints more of liquid (linseed oil and turpentine) than would have been used if the paint were to have been white. If, for example, the body coat formula for exterior wood is being followed, 5¼ pints of turpentine and 5¼ pints of linseed oil would be used.

Formulas for Exterior Colors. The following formulas with the exception of those marked "No white-lead" are based on the use of 100 pounds of Dutch Boy white-lead. Color formulas for one gallon of paint may be obtained by dividing the color formulas given by the number of gallons produced by the particular 100-pound paint formula used. Read section entitled "Tinting One Gallon of Paint" on page 31.

Pale Buff
100 pounds Dutch Boy white-lead
1 pound french ochre
3 ounces medium chrome yellow

Light Olive Green
100 pounds Dutch Boy white-lead
1 pound lemon chrome yellow
7 ounces medium chrome yellow
1 ounce lampblack

Colonial Yellow
100 pounds Dutch Boy white-lead
2 pounds medium chrome yellow

Medium Gray
100 pounds Dutch Boy white-lead
¼ pound lampblack

Yellowish Tan
100 pounds Dutch Boy white-lead
20 pounds french ochre
1 pound medium chrome yellow
1 ounce lampblack

Yellow Green
100 pounds Dutch Boy white-lead
15 pounds medium chrome green
5 pounds medium chrome yellow
8 ounces lampblack

Warm Drab
100 pounds Dutch Boy white-lead
1½ pounds medium chrome yellow
2 pounds venetian red
1 pound lampblack

Olive Green
100 pounds Dutch Boy white-lead
19 pounds medium chrome yellow

1 pound medium chrome green
2½ pounds lampblack

Dark Venetian Red
100 pounds venetian red
40 pounds indian red
No white-lead

Pale Greenish Yellow
100 pounds Dutch Boy white-lead
5 ounces medium chrome yellow
1¼ ounces medium chrome green

Buff
100 pounds Dutch Boy white-lead
2 pounds french ochre
½ pound medium chrome yellow

Light Yellowish Green
100 pounds Dutch Boy white-lead
1½ pounds medium chrome green
½ pound medium chrome yellow

Reddish Yellow
100 pounds Dutch Boy white-lead
14 pounds french ochre

Grayed Blue Green
100 pounds Dutch Boy white-lead
¼ pound chinese blue
½ pound medium chrome yellow
3 ounces lampblack

Yellowish Brown
100 pounds Dutch Boy white-lead
86 pounds french ochre
3 pounds venetian red
1 pound lampblack

Dark Gray
100 pounds Dutch Boy white-lead
1¼ pounds lampblack

Dark Brown
100 pounds french ochre
28 pounds venetian red
5 pounds lampblack
No white-lead

Dark Green
100 pounds medium chrome green
8 pounds medium chrome yellow
1 pound lampblack
No white-lead

Painting Wood Shingles. A paint for wood shingles should be prepared as follows:

For the priming coat use formula No. 1, page 6.

For the second coat use:

Formula No. 11—Second Coat
(*Wood Shingles*)

100 pounds Dutch Boy white-lead
2 gallons pure raw linseed oil
1 gallon pure turpentine
1 pint pure drier

This formula makes 6 gallons of paint.

For the third coat use formula No. 3, page 6.

Staining Wood Shingles. A small amount of tinting material, sufficient to stain the shingles to the desired color, should be added to a mixture of the following oils:

(a) 1/3 Dutch Boy flatting oil
1/3 pure boiled linseed oil
1/3 creosote oil

—or—

(b) 1/3 Dutch Boy flatting oil
2/3 pure boiled linseed oil

Helpful Hints in Mixing and Applying Paint. Be sure to mix plenty of paint, both for body and trim. It is better to have some left than to run short, especially if you are using a tinted paint. None will be wasted, for the left-over is useful for painting cellar stairs, roof valleys or gutters and various odd places. Often the body and trim colors can be thrown together for such work, bringing the mass to a neutral color by adding lampblack.

2. Note carefully the order of putting in the coloring matter as instructed. If the lead is mixed to painting consistency before the coloring matter is added, the latter is likely to break up in lumps and make streaks when brushed out.

3. It is an excellent idea to strain paint thru cheesecloth or a wire strainer before using as this will be a further safeguard against lumpy colors and consequent streakiness. Paint also spreads further if strained.

4. Never use benzine or kerosene as a thinner instead of turpentine. This is sometimes done but they are inferior and injure the paint.

5. Use only the best liquid drier of some well-known manufacturer.

6. Dark driers as well as turpentine will slightly alter shades, and this must be taken into consideration.

7. On new wood, knots and sappy streaks should be shellacked with pure alcohol shellac, brushed out very thin before priming. When the lumber has very many knots, less oil and more turpentine may be used than the formula calls for, as too much oil on the knots causes later coats to draw and check.

8. Do not do outside painting in extremely cold, frosty or damp weather. Painting may be done in winter if care is taken to choose periods when temperature is right (above 50° F.) and surfaces are dry.

9. Moisture in wood is the greatest foe to paint. Wood in new buildings is almost always water-soaked. Let it dry before painting.

10. Be equally careful when repainting. Wait for dry weather and examine the surface carefully for moisture before painting.

11. The surface to be repainted should be smoothed down before the new paint is applied. If the old paint was white-lead and linseed oil, all that will be required is a dusting off. If hard paint was used it will be necessary to scrape the surface or perhaps burn the old paint off with a gasoline torch. Do not paint over old, lumpy, scaling paint.

12. Brush the paint well into the pores of the wood. Do not allow the paint merely to flow from the brush.

13. Use nothing but putty made of linseed oil and equal parts of white-lead and whiting for filling nail-holes, cracks, knot-holes, dents and other defects in the surface. These places should be filled thoroly after applying the priming coat. Putty containing petroleum and marble dust often mars what would otherwise be a good painting job, by making yellow nail-holes and cracks.

14. Preparations of cheap shellac, rosin, etc., are likely to cause knots to turn yellow.

15. It is well to mix the paint 24 hours before being used, but if the paint is to stand long do not put the drier in until just before application. It is better not to allow paint to stand for long periods. It becomes fatty.

16. Two thin coats of paint are better than one thick coat.

17. In the case of linseed oil substitutes, it is

sometimes claimed for substitutes that they are "just as good." Some of these substitutes are worthless. You should not, under any circumstances, allow yourself to be persuaded to use any vehicle for outside painting in place of pure linseed oil, unless you have proved it to be satisfactory. In general, for one substitute that possesses virtue there are many that are simply adulterants.

18. Allow plenty of time between coats for the paint to dry. Exterior work should be allowed to dry two or three days before the next coat is applied and interior work at least twenty-four hours.

Departments of Technical Paint Service and Decoration. If you have some special problem of a technical nature that is not covered in this book address your inquiry to us and our Departments of Technical Paint Service and Decoration will give it prompt attention.

If you wish color scheme suggestions for the exterior decoration of a house, please give us the information requested on page 33, so that we can more satisfactorily help you with your problems.

CHAPTER II
Interior Wall Painting

The decoration of interiors presents a problem quite different from the painting of exteriors. Paint used inside is not exposed to the weather and is consequently mixed differently from paint intended for outside use. A large part of interior surfaces is plaster, which is treated differently from wood. Glossy paint is invariably used on exteriors while the decoration of interiors calls for a variety of finishes (lustreless, semi-gloss, full gloss, etc.), and a range of color effects which includes those more delicate and elusive tints not ordinarily selected for exterior use.

The points to consider in the treatment of interior surfaces are beauty, cleanliness and economy. Beauty involves color and style of finish. Cleanliness depends upon washability. Economy has to do with cost and years of wear. These three results are best reached by the use of paint made of pure white-lead.

Soft-Tone Effects. Most inside painting nowadays is done in dull or so-called "flat" effects. Up to a few years ago, these flat effects were always obtained with white-lead by thinning it with turpentine instead of linseed oil. At that time, special flatting oils for use with white-lead were developed. These flatting oils are largely superseding turpentine for interior painting. The handsome, durable, washable, soft-toned finishes which flatting oil gives is resulting in a marked increase in the popularity of the painted wall, especially for homes.

One of the most successful flatting oils on the market today is Dutch Boy flatting oil. It flats white-lead better than turpentine does, yet binds the pigment particles together, insuring a paint film which will not chip off.

Dutch Boy flatting oil is designed especially for use with Dutch Boy white-lead. So used, it produces a soft, glossless finish that has a depth of tone and a richness all its own.

Aside from the remarkable beauty of a Dutch Boy white-lead and Dutch Boy flatting oil finish, the paint merits consideration from the standpoints of cleanliness and service. The hard, tile-like film it forms stands frequent washing with warm water, mild soap and a soft cloth or a sponge and can thus be kept absolutely clean and sanitary. The durability of the paint is not affected in any way and there is no unsightly streaking as often occurs when a less stable paint is washed.

Dutch Boy flatting oil with white-lead also makes a superior under-coating for enamels.

Dutch Boy flatting oil is sold in one and five gallon cans, bearing the famous Dutch Boy trademark as a guaranty of excellence. Complete directions for use are printed on each can.

Area of Room Surfaces. In estimating the number of square feet in a room to be painted, it is the practice to consider the walls, ceiling and woodwork as separate units. It is necessary to do this as paint for plaster is mixed differently from that for wood, and the ceiling and sidewalls are not usually the same color.

To ascertain the area of wall surface to be painted, multiply the linear measurement around the walls of the room (perimeter) by the height of the walls (measured from baseboard to picture molding or ceiling). From the area thus obtained, deduct the area occupied by doors and windows. Divide the result by 600, which is approximately the number of square feet of surface one gallon of paint will cover. The answer is the number of gallons of paint needed for one coat.

To determine the area of the ceiling, multiply together its two dimensions. To this figure, add the area of the four strips of wall surface above the picture molding. Divide the total area thus obtained by 600 which gives the quantity of paint needed for one coat.

If walls or ceiling are irregular in shape, divide into rectangles, calculating separately the area of each rectangle. The sum of the areas gives the total amount of surface to be painted and dividing by 600 gives the number of gallons of paint needed for one coat.

Number of Coats. Three coats are recommended for interior plaster which has never before been painted—a priming coat, a second or body coat, and a third or finishing coat. If the plaster has been painted before, two coats are sufficient, and the priming coat may be omitted. The old paint, if in good condition, serves as a priming coat.

If a two-coat job on new work is desired, use the priming and finishing coats given in the formulas which follow, omitting the second coat. To make two coats hide better, mix the first coat a little darker than the second coat.

Two coats cannot be expected to hide as well as three nor to give as fine a finish. In fact, it is not considered the best practice to use only two coats on new work. Experience has shown that three coats are necessary for entirely satisfactory results, and it is best therefore to play safe always by using three coats.

Preparing the Surface. It is best always to allow plaster at least six months to dry out thoroly or "set" before attempting to paint it. Fresh plaster contains a certain amount of free alkali which has a tendency to keep paint from drying properly and to cause colors to bleach out.

A good many people do not care to let their walls go unpainted for six months. In such cases, painters oftentimes artificially "age" the new plaster by treating the surface with a solution made by dissolving two pounds of zinc sulphate in one gallon of water. After this solution is applied, sufficient time is allowed for the plaster to dry before priming.

Plaster often shows fine, hairlike cracks due simply to the shrinkage of the plaster as it dries out. These cracks are called "fire-cracks." Sometimes fire-cracks in bare plaster are invisible but become noticeable after the first coat of paint has been applied. This is due to the fact that they absorb oil from the paint, leaving a "flat" line on the surface. To correct this condition, painters oftentimes resort to the use of sizes, which seal the pores of the plaster.

Two particular classes of sizes in more or less general use are glue sizes and varnish sizes. Both have given good and bad results according to whether they have been used properly or not. The safest thing to do is to purchase a size made by a manufacturer known to be reliable and to use it in accordance with the directions on the package.

Glue sizes are usually applied over the priming coat of paint. The reason for this practice is that glue sizes give much better results between coats of paint than when applied to the bare plaster.

Varnish sizes are applied to the plaster and usually take the place of the priming coat.

Sometimes the second coat will hide the fire-cracks but occasionally a proper size over the priming coat is required to seal them.

If fire-cracks are evident before the priming coat is applied, the size is sometimes rubbed on the plaster with a cloth to seal the cracks.

Before applying any paint, be sure that the plaster or old paint is clean and smooth. Go over the wall very lightly with fine sandpaper or a wide putty knife to remove grit and any loose plaster or paint, taking care not to scratch the surface.

Fill all cracks and holes with plaster of paris or approved patching plaster. In the case of large cracks, open them up clear down to the lath, soak the edges with water, and then fill the openings with plaster of paris or approved patching plaster. Be sure to level off the plaster of paris properly so that the filled places will not form ridges in the wall. When the plaster of paris has dried thoroly, sandpaper down to a smooth, even surface.

Walls that have been calcimined should be washed clean before applying white-lead paint.

Mixing the Paint. To mix paint for interior work from white-lead, follow the mixing directions appearing on page 6 under the heading "Mixing the Paint." The only difference is that for all but the priming coat, flatting oil or turpentine is used in place of linseed oil. The following formulas are for white paint. See page 13 for tinted paint.

Formula No. 12—Priming Coat

(Plaster Walls—Interior)

100 pounds Dutch Boy white-lead
†7 gallons pure boiled linseed oil
1 gallon pure turpentine

The preceding formula makes 11 gallons of paint which should cover 5,500 square feet, one coat.

Formula No. 13—Second Coat

(Plaster Walls—Interior)

(a) 100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil
—or—
(b) *100 pounds Dutch Boy white-lead
½ gallon pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

The above formula (a) makes 5 to 6 gallons of paint which should cover about 3,500 to 4,200 square feet, one coat. Formula (b) makes 5½ gallons of paint, which should cover about 3,300 square feet, one coat.

Formula No. 14—Third Coat, Flat Finish

(Plaster Walls—Interior)

(a) 100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil
—or—
(b) *100 pounds Dutch Boy white-lead
2 gallons pure turpentine
1 pint pale varnish (suitable for enamel)
½ pint pure drier

The above formula (a) makes 5 to 6 gallons of paint which should cover about 3,500 to 4,200 square feet, one coat. Formula (b) makes 5 gallons of paint, which should cover about 3,000 square feet, one coat.

Formula No. 15—Third Coat, Egg-Shell Gloss Finish

(Plaster Walls—Interior)

(a) 100 pounds Dutch Boy white-lead
1½ to 2 gallons Dutch Boy flatting oil
¾ gallon pale varnish (suitable for enamel)
—or—
(b) *100 pounds Dutch Boy white-lead
1½ to 2 gallons pure turpentine
¾ gallon pale varnish (suitable for enamel)
½ pint pure drier

The formulas above make 5 to 5½ gallons of paint which should cover about 3,000 to 3,300 square feet, one coat.

Formula No. 16—Third Coat, Oil Gloss Gloss Finish

(Plaster Walls—Interior)

Note: The following formula should be used only for dark colors, as light-colored paint containing considerable raw linseed oil will yellow badly when used on interiors. Where a light-colored gloss finish is required, follow formula No. 17.

(a) 100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
¼ gallon Dutch Boy flatting oil
1 pint pure drier
—or—
(b) *100 pounds Dutch Boy white-lead
3 to 3½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

The preceding formula (a) makes 6¼ gallons of paint which should cover about 3,750 square feet, one coat. Formula (b) makes 6 to 6½ gallons of paint, which should cover about 3,600 to 3,900 square feet, one coat.

Formula No. 17—Third Coat, Enamel Finish

(Plaster Walls—Interior)

3 pounds Dutch Boy white-lead (mixed and drawn as explained below)
1 gallon pale varnish (suitable for enamel)

This formula makes one gallon of paint which should cover 500 square feet, one coat.

To mix and draw white-lead as required for varnish gloss finish, mix the white-lead with turpentine, 3 pounds to 1 gill, and let the mixture stand overnight or longer to settle. Then draw off the thinners from the top and add the pale varnish.

Colored Interior Paint. The preceding formulas for interior painting produce white paint. If colored paint is desired, the white paint can be tinted by the addition of proper tinting colors before all the thinners are added, as explained on page 6 under "Mixing the Paint." See also section on "Colored Exterior Paint" on page 8, which gives some valuable pointers on the selection and use of colors-in-oil, and formulas on next page. Color formulas for one gallon of paint may be obtained by dividing the color formulas given by the number of gallons produced by the particular 100-

†If boiled linseed oil cannot be obtained, 7 gallons raw linseed oil with 3 pints drier may be used instead and will in most cases give satisfactory results. Boiled oil is much superior, however, and will often obviate trouble when conditions are difficult. It seals pores in the plaster and prevents suction. Contrary to the belief of many, boiled oil can be had.

*All formulas for the painting of plaster, which are marked with an asterisk, are alternates to be followed only if turpentine is to be used instead of Dutch Boy flatting oil.

pound paint formula used. Read section entitled "Tinting One Gallon of Paint" on page 31.

Pink
100 pounds Dutch Boy white-lead
2 ounces medium chrome yellow
4 ounces venetian red

Pale Yellowish Gray
100 pounds Dutch Boy white-lead
1 ounce lemon chrome yellow

Light Yellow Green
100 pounds Dutch Boy white-lead
1½ pounds medium chrome yellow
½ pound medium chrome green

Light Grayed Blue
100 pounds Dutch Boy white-lead
4 ounces chinese blue
7 ounces medium chrome yellow

Reddish Buff
100 pounds Dutch Boy white-lead
14 pounds french ochre

Light Warm Gray
100 pounds Dutch Boy white-lead
2 ounces medium chrome yellow
3 ounces lampblack

Light Tan
100 pounds Dutch Boy white-lead
2 pounds medium chrome yellow
1 ounce venetian red
1 ounce lampblack

Grayed Blue
100 pounds Dutch Boy white-lead
½ pound medium chrome yellow
¼ pound chinese blue
3 ounces lampblack

Brown
100 pounds Dutch Boy white-lead
86 pounds french ochre
3 pounds venetian red
1 pound lampblack

Cream
100 pounds Dutch Boy white-lead
5 ounces medium chrome yellow

Light Yellowish Tan
100 pounds Dutch Boy white-lead
2 pounds medium chrome yellow
1 ounce lampblack

Light Yellow
100 pounds Dutch Boy white-lead
1 pound medium chrome yellow

Light Reddish Buff
100 pounds Dutch Boy white-lead
6 pounds french ochre
1 ounce venetian red
1 ounce lampblack

Grayed Green
100 pounds Dutch Boy white-lead
8 ounces medium chrome yellow
1 pound medium chrome green
1 ounce lampblack

Salmon
100 pounds Dutch Boy white-lead
10 pounds french ochre
16 pounds venetian red

Light Grayed Blue
100 pounds Dutch Boy white-lead
½ pound medium chrome yellow
3 ounces chinese blue
1½ ounces lampblack

Yellowish Tan
100 pounds Dutch Boy white-lead
20 pounds french ochre
1 pound medium chrome yellow
1 ounce lampblack

Yellow Green
100 pounds Dutch Boy white-lead
13 pounds medium chrome green
10 pounds medium chrome yellow
¼ pound lampblack

Applying Flat Paint. The beauty of a wall painted with flat paint depends to a large degree on how the paint is applied, especially the final coat. Flat paint dries more quickly than gloss paint and brush-marks, laps and joints will show if the work is not done properly.

Start at one end of the wall at the top, painting a section or "stretch" about three feet wide and working down (not across) the wall.

When the bottom of the wall is reached, start another stretch about the same width, joining it to the first one and working down the wall as before. Repeat the process until the whole wall is painted, making sure to work fast enough to keep one section from drying before another is joined to it.

If the paint used is made with Dutch Boy flatting oil, no trouble will be experienced in joining sections or catching laps. Paint made with Dutch Boy flatting oil sets slowly so that there is no danger of the paint in one stretch becoming set before another can be joined to it. This is one of the reasons for the increasing popularity of Dutch Boy flatting oil.

Flat paint should be flowed on. You will find that the paint flows together, much as varnish does, forming a smooth, even film.

Stippling. Paint for interior walls is oftentimes stippled. A stippled effect is produced simply by pouncing the paint, just before it has set, with a stiff brush, producing a uniform texture.

Paint to be stippled is mixed thicker than usual and may be varied in this respect according to the degree of stippling desired. The stippling brush brings the little points of paint out as the brush leaves the surface and these points of paint tend to flow back more completely with thin paint and less completely with thick paint. Thin paint is produced by the use of more flatting oil or turpentine with white-lead. Vice versa, thick paint, is produced by the use of less thinners in the paint.

Special Wall Finishes. Many of the most discriminating prefer walls decorated in one color on a neutral shade and without doubt in many cases good taste dictates this treatment. Others have a predilection for blended, mottled or figured wall effects and these are frequently suitable. Many owners think they must give up the sanitary and other advantages of paint when anything but a plain, unfigured finish is desired. This is a great mistake. It is now widely known that a large number of very beautiful and highly decorative blended, mottled and figured wall effects are obtainable with paint made of white-lead and flatting oil at a surprisingly low cost. And, moreover, with these effects are still retained the advantages of washableness, sanitary qualities and rich texture.

Plain walls are the thing where simplicity is indicated, where care must be taken not to detract from pictures or in large formal rooms where a certain severity adds to stateliness. But there are many cases where the use of special finishes is not only in excellent taste but preferable. To help meet this demand we have described on the following pages several of the

latest and smartest blended, mottled and figured wall effects obtainable with paint, and, as said before, these are not expensive when done with Dutch Boy white-lead and flatting oil by the methods we have developed.

Two-tone Crumpled Roll Finish. To produce this finish, two harmonizing colors sufficiently different in tone to offer an interesting amount of contrast should first be selected for use.

The ground or second coat, prepared on formula No. 13, page 12, should be tinted to match one of the colors selected and should be applied and allowed to dry. Over this should be brushed the finishing coat, prepared on formula No. 14, page 12, tinted to match the second color selected for use.

While the section of finishing coat which has been applied is still wet, a double sheet of newspaper should be crumpled tightly into an elongated wad about seven to eight inches in length.

Starting then from the top left-hand corner of the freshly painted surface and working downward, the roll of crumpled paper should be turned over and over with the fingers, pressing it firmly against the wall to keep it from slipping.

When the bottom of the surface is reached, the process should again be repeated for the next strip, permitting the end of the roll of paper to just overlap the edge of the previous strip, after which the downward rolling should again be repeated.

New rolls of paper should be substituted when the paper in use becomes so saturated with paint as to leave an indistinct impression.

After a wall has been rolled it must be examined and all blank spaces patted with the end of the crumpled paper, and all blurs touched up and re-rolled while they are still wet.

Care should be taken to apply no larger section of the finishing coat than can be conveniently rolled before it sets up.

The principal problem involved in a treatment of this type lies in the selection of the two colors to be used in the rendering. Such colors as ivory for a ground and medium brown for a finishing coat combine quite happily, as do salmon pink and pale smoke gray. Formulas for preparing these colors will be found on page 13.

If considerable difference exists between the colors selected for use, an effect may be expected that is sharper and more clearly defined than in the case of two colors which are more or less similar. Just as a dark finish may be employed over a light ground, in the reverse way a light finish may be employed over a dark ground.

It must, however, be kept in mind that as only approximately one-third of the ground coat shows thru, the finishing coat is the one which determines the dominant color of the decorative effect.

In new work the second coat should be tinted to the desired ground color, while the third coat should be colored in a sufficiently different manner to show a proper degree of contrast when removed by rolling in the manner previously described. On repaint work, however, the side wall color already in place may be employed as the ground, and in such an instance the single finishing coat to be applied over it should be tinted with proper reference to the ground so that the desired degree of difference will be apparent.

Experiment with this finish will show that the size of the figure is determined by the closeness with which the paper selected for use is crumpled. A paper crumpled in a very loose manner would produce a more or less widely spaced effect, while a closely crumpled paper would produce an exceptionally uniform treatment wherein a considerable amount of the finishing coat is removed.

Where a three-tone finish is required, another coat of flat paint, tinted to a third color, should be applied over the preceding coat when dry and then rolled as previously described.

The two-tone crumpled roll finish should not be attempted on rough-finished surfaces since the high points of the plaster will prevent the newspaper from reaching the paint in the depressed portions, leaving, in consequence, an indistinct pattern.

Satin Finish. The satin or, as it is sometimes called, the silk finish, offers quite a unique form of side wall treatment, particularly for use in panels.

Contrary to the preceding effect, the finishing coat, tinted to the desired color, should be prepared on formula No. 15, page 12, to produce an eggshell gloss instead of a flat. When brushed out and allowed to dry, a light stencil color of paste consistency, thinned slightly with Dutch Boy flatting oil, should be applied thru the openings of a stencil previously selected. The stencil design should as closely as possible approximate the general character of pattern commonly associated with satin and silk fabrics.

The flat color applied thru this stencil should be tinted on a light order to properly harmonize with the eggshell gloss ground color.

After the stencil has been removed and the work is dry, it will be noted that a changeable effect has been secured of exceptional interest.

To the observer standing immediately in front of a panel carried out in this manner, it would seem as tho a plain stencil treatment in delicate colors had been employed. When viewed, however, from such an angle as to receive the light directly reflected from the finish, it will be observed that the ground color, which when previously noted appeared dark and the stencil light, now appears in just the reverse manner.

This change is, of course, due to the ability of the eggshell gloss ground to more perfectly reflect the light which it receives than does the flat stencil. In consequence, the former will appear quite light and the latter dark.

To obtain the best results, the eggshell gloss coat should always be tinted on a slightly darker and stronger order than the light flat stencil color.

Stencil Finish. Whether a decorative note of color is required over an entire side wall or simply in small spots here and there in the panels, the stencil offers a ready means of supplying it. It is invaluable as a quick method with which to secure a frieze or panel border where moldings are missing.

Altho it can be applied with comparative ease, there are two points which should not be overlooked in connection with its application. First, care should be taken to avoid the use of a thin paint as a stencil color. The paint should be of practically paste consistency, thinned slightly with Dutch Boy flatting oil, and should be applied with a fairly dry brush. Second, care should be taken to actually compare the stencil color directly against the ground over which it is to be applied, since those colors in the immediate vicinity of the stencil will

influence and seem to change its color characteristic to a surprising degree.

Lace Stencil Finish. The lace stencil finish lends itself very readily for use in panels where a treatment is wanted that may be rendered in such minute detail as to still hold the observer's interest under closest inspection.

The flat ground, prepared on formula No. 14, page 12, over which the stencil is placed, may be a one-tone treatment or a blended or shaded effect as described on this and the opposite page.

When the ground is dry, a strip of lace of selected pattern should be coated with thinned shellac in order to make the fabric non-absorbent and protect it for future use.

The lace should be placed firmly against the side wall in the particular area designated to receive it and the color should be stenciled thru the openings with a comparatively dry brush.

In this type of treatment, a word of caution should be introduced against the use of too fine a lace pattern, as difficulty will be encountered unless the openings are sufficiently large to properly enable the bristles of the brush to penetrate to the ground beneath.

In rendering this lace effect, a light finishing coat may be used for a ground over which a dark stencil color is applied; or, in the reverse manner, a light stencil color may be worked over a dark ground.

Tiffany Finish. To produce a tiffany or, as it is sometimes called, a blended or glazed finish, the surface should first be brought up to the ground color selected by adding the required amount of tinting materials to formula No. 14, page 12. This finishing coat when applied should be allowed to thoroly dry. Over this should be brushed a coat of straight Dutch Boy flatting oil, taking care to cover no larger area than can be conveniently worked.

While the flatting oil is still wet, the glazing colors selected should be applied here and there.

With a ball of cheesecloth, the colors should be blended one into another with a circular or figure 8 motion. High lights should then be wiped out here and there to permit the ground color to show thru and the work finished by tamping with a ball of cheesecloth.

The method as outlined above applies of course to smooth finish plaster, but equally interesting effects on this same order may be obtained on rough finish plaster, provided the glazing colors when applied are blended into one another by tamping with a stippling brush.

Shaded Tiffany Finish. The shaded tiffany consists of deeper colors blended near the base and graduated into a lighter ground color as the ceiling line is approached. Besides giving an interesting decorative effect, it has many advantages. It is often employed as a treatment for the cove, side wall panel or for the vaulted ceiling to give the appearance of increased height.

An appropriate flat ground color, prepared on formula No. 14, page 12, tinted for example on a cream order, is selected, applied and allowed to dry. Over this a coat of straight Dutch Boy flatting oil is brushed to cover such a section of the surface as can be easily worked at one time.

While the flatting oil is still wet, the glazing colors selected should be applied near the top of the surface in small spots, considerably removed from one another, and as the application of these spots continues down the wall, they should be made larger and more closely spaced as the base line is approached.

As outlined under "Tiffany Finish," the colors should be blended into one another with a ball of cheesecloth with a faint suggestion of wiped high lights, thru which the ground color would be just discernible.

The work should then be finished by tamping with a ball of cheesecloth, but care should be taken to see that the tamping is commenced with a clean cloth at the top of the wall.

The plain shaded effect is carried out in a similar manner save that the color gradation should be as even as possible with no attempt being made to suggest high lights by wiping thru to the ground color beneath. The ground should only be permitted to show at the top of the wall surface and into which the glazing color is gradually blended.

Polychrome Finish. The polychrome or multicolored finish is interesting for use where spots of color are required to accentuate certain moldings composed of individual units such as the egg and dart, bead, floral motifs, etc., that may be present in the interior. This finish is, as a general rule, most satisfactory for use as an added touch of decoration in a room wherein a plain one-tone treatment has been employed on the side wall and ceiling.

This finish is best obtained by employing on the various units composing the molding several different colors which have been extended into tints by the addition of Dutch Boy white-lead. These tints should be quite light and nearly equal in value. To pick out parts of moldings in certain of these light colors offers a remarkably effective treatment for large rooms, since it lends a colorful touch to an interior that might otherwise appear cold and uninteresting.

Two-tone Glaze or Antique Finish. This method of finishing the plain one-tone wall, or some more elaborate decorative treatment, is indispensable where the colors that have been employed need to be softened and a rich depth of tone added to the work.

The effect is simply obtained by first preparing a thin semi-transparent glaze composed of Dutch Boy flatting oil to which has been added the desired amount of tinting material to pro duce the depth of tone required. In the case of a one-tone wall, this glaze should be applied over the dry finishing coat, prepared on formula No. 14, page 12, and while the glaze is still wet it should be wiped lightly over with a ball of clean cheesecloth. This operation will remove a certain amount of the glaze, permitting a sufficient portion to remain on the surface to present an antique effect.

Wiped Stencil Finish. Starting with a dry one-tone flat ground, prepared on formula No. 14, page 12, and tinted to the desired color, a coat of straight Dutch Boy flatting oil is applied. On this wet surface the glazing colors selected are spotted in an uneven manner. The colors are then blended one into another until a tiffany finish is produced.

While the tiffany is still wet the stencil selected for use should be placed firmly against the surface and the glaze appearing thru the openings of the stencil should be removed by wiping with a ball of cheesecloth. This will permit the ground color to show thru.

The ease with which an error can be corrected by simply glazing over the spot and rewiping thru the stencil can be readily appreciated. The ability of the painter to actually complete his stencil work without having to wait until the ground is dry before the usual stencil work can be applied is also obvious.

There are many interesting possibilities with this finish. When the stencil is placed against the wall, the glaze may be wiped out in a clean manner to show a clear-cut pattern, or may be wiped lightly to show a faint and somewhat indistinct outline. When the latter is done, care should be taken to wipe clean the edge of the area appearing thru the stencil opening. This operation permits a small amount of the glazing color to remain in the center of each motif, harmonizing with the remainder of the glazing color used on the side wall.

Another interesting method of treatment is to wipe clean the areas appearing thru the stencil openings and then apply, in the regular stencil manner, some of the clear glazing colors which were used in originally spotting the wall for the glazed effect. This will naturally produce a stencil in complete harmony with the remainder of the side wall since identically the same colors were employed.

The wiped stencil is, of course, appropriate for use only on smooth finish plaster, since obvious difficulties would be encountered in endeavoring to wipe clear the surface of a rough-finished ground.

Striped Finish. Where a simple method of treatment is required to lend a distinctive air to an interior which has been treated in a plain one-tone effect, striping lines may be used with excellent results. The striped finish consists of nothing more than a narrow banding line of some harmonizing color of greater strength than that applied on the side wall.

For general use this line should perhaps be three-quarters of an inch in width, completely outlining all window frames, door frames, and running parallel with such other interior trim as may be present.

The striping line should be applied direct to the side wall a few inches out from the wood trim, the distance depending largely on the width of the stripe which is, in turn, invariably determined by the size of the room. The usual distance in the normal room is about three to four inches for a three-quarter inch stripe.

Striping is also employed where imitation stone effects are required as a method of marking their outline.

Paneled Effects with Paint. Large interior surfaces are often encountered that would appear far more interesting if treated in a paneled effect than as tho they were permitted to remain in large unbroken areas.

Striping or stenciling with paint to produce panels offers a simple solution of the problem. In laying off the side wall in panels, considerable discretion should be exercised in order that the panels may be interesting in shape. As a general rule, panels should be taller than they are wide in order to lend an atmosphere of height to the interior. When panels have been outlined and the decorative panel treatment carried out, a solid striping line of color or a stencil border should be applied to properly frame each panel. The width of the border selected for use is dependent on the panel size.

Sponge-Mottled Finish. In the sponge-mottled finish the colors chosen for the ground and mottling coats should differ sufficiently to show the desired degree of contrast in the finished effect.

The flat ground, prepared on formula No. 14, page 12, over which the sponge-mottled is to be applied, should be tinted to some light color and should be allowed to thoroly dry.

A coarse fibre sponge should be cut in halves in order to present a flat surface. The sponge should then be immersed in water to properly soften the fibres, after which it should be carefully wrung out. The flat surface, dipped into the finishing coat previously prepared and of a color differing from the ground, should be pressed against the side wall here and there over the entire surface. Care should be taken to dip the sponge into the finishing color often enough to leave a uniform sponge print.

Where three or more colors are required in the finished effect, these may be prepared and applied as previously described.

Combination Effects. All the special wall finishes described on the foregoing pages are subject to interesting variations and many may be used with excellent results in combinations one with another. A little experimenting will disclose innumerable possibilities. For example, the two-tone crumpled roll finish serves as an excellent background over which to apply a sponge-mottled or stencil, giving an elaborate and highly decorative treatment. In the same way a lace effect can be worked out with exceptional success over a tiffany or shaded ground.

Painting Fabric Coverings. To overcome defects in plaster walls or to anticipate others which it is feared may develop, plaster walls are sometimes covered with muslin or a specially prepared fabric of some kind which is then painted. No difficulties are encountered in painting such fabric coverings. The painting is done in the regular way just as if plaster were being painted, and the finished job is practically indistinguishable from ordinary painted plaster. If the fabric has been prepared with size no priming coat is necessary.

Painting Wall Board. Composition wall board, which is used on many interiors to take the place of plaster, can be painted with satisfactory results. Such surfaces may be treated in the same way as new plaster walls and the painting should be done as directed under "Preparing the Surface," page 11, and "Mixing the Paint," page 12. If the wall board has been prepared with a size no priming coat is necessary.

Washing Painted Walls. The side walls should first be sponged upward with clear water, after which they should be washed down with water and a pure neutral soap such as castile. The work should then be thoroly rinsed.

Departments of Technical Paint Service and Decoration. If you have some special problem of a technical nature that is not covered in this book address your inquiry to us and our Departments of Technical Paint Service and Decoration will give it prompt attention.

If you wish color scheme suggestions for the interior decoration of a house, please give us the information requested on page 33, so that we can more satisfactorily help you with your problems.

CHAPTER III

Interior Wood Finishing

The same general principles which apply to the painting of exterior wood may be laid down for the painting of interior wood. The paint is applied in the same way and the same number of coats are used, but the formulas for mixing differ due to the fact that paint on interior wood is not exposed to the sun and rain and the finish may be a full gloss, a dead flat, or any intermediate finish.

Before mixing the paint, refer to mixing directions on page 6 under the heading "Mixing the Paint." Also see "Helpful Hints in Mixing and Applying Paint" on page 9.

Estimating Quantity of Paint. Treat all doors as if they were plain rectangular shapes, multiplying height by width to arrive at area. Divide the result by 600, which is approximately the number of square feet of surface one gallon of paint will cover. The answer is the number of gallons of paint needed for one coat. For other woodwork, such as window frames, baseboards, molding, etc., simply figure 3/5 gallon of paint for every 100 running feet.

Painting New Inside Wood. The following formulas are for white paint. See page 13 for tinted paint.

Formula No. 18—Priming Coat

(New Inside Wood)

(a) 100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
3 gallons Dutch Boy flatting oil
1 pint pure drier

—or—

(b) *100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
3 gallons pure turpentine
1½ to 2 pints pure drier.

The preceding formulas make 10 gallons of paint which should cover about 5,750 square feet, one coat.

As on outside wood, the painter may exercise his discretion in the use of the thinners prescribed—thus on white pine, poplar and basswood, which more readily absorb oil, increase the quantity of linseed oil. On yellow pine, cypress, spruce and hemlock, use less linseed oil and more flatting oil or turpentine and drier.

Formula No. 19—Second Coat

(New Inside Wood)

(a) 100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil

—or—

(b) *100 pounds Dutch Boy white-lead
½ gallon pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

The preceding formula (a) makes 5 to 6 gallons of paint which should cover about 3,500 to 4,200 square feet, one coat. Formula (b) makes 5½ gallons of paint, which should cover about 3,300 square feet, one coat.

Formula No. 20—Third Coat, Flat Finish

(New Inside Wood)

(a) 100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil

—or—

(b) *100 pounds Dutch Boy white-lead
2 gallons pure turpentine
1 pint pale varnish (suitable for enamel)
½ pint pure drier

The preceding formula (a) makes 5 to 6 gallons of paint which should cover about 3,500 to 4,200 square feet, one coat. Formula (b) makes 5 gallons of paint, which should cover about 3,600 square feet, one coat.

Formula No. 21—Third Coat, Egg-Shell Gloss Finish

(New Inside Wood)

(a) 100 pounds Dutch Boy white-lead
1½ to 2 gallons Dutch Boy flatting oil
¾ gallon pale varnish (suitable for enamel)

—or—

(b) *100 pounds Dutch Boy white-lead
1½ to 2 gallons pure turpentine
¾ gallon pale varnish (suitable for enamel)
½ pint pure drier

The above formulas make 5 to 5½ gallons of paint which should cover about 3,000 to 3,300 square feet, one coat.

Formula No. 22—Third Coat, Oil-Gloss Finish

(New Inside Wood)

Note.—The following formula should be used only for dark colors, as light-colored paint containing considerable raw linseed oil will yellow badly when used on interiors. Where a light-colored, oil-gloss finish is required, follow formula No. 17, page 12.

(a) 100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
¼ gallon Dutch Boy flatting oil
1 pint pure drier

—or—

(b) *100 pounds Dutch Boy white-lead
3 to 3½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

The first formula (a) above makes 6¼ gallons of paint which should cover about 3750 square feet, one coat; the second formula makes 6 to 6½ gallons of paint which should cover about 3,600 to 3,900 square feet, one coat.

Repainting Inside Wood. Two coats are enough for old work, for the old paint serves as a priming coat.

Formula No. 23—First Coat

(Repainting Inside Wood)

(a) 100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil

—or—

(b) *100 pounds Dutch Boy white-lead
½ gallon pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

The preceding formula (a) makes 5 to 6 gallons of paint which should cover about 3,500 to 4,200 square feet, one coat. Formula (b) makes 5½ gallons of paint, which should cover about 3,300 square feet, one coat.

* Formulas marked with asterisks are alternates to be followed only if turpentine is to be used in place of Dutch Boy flatting oil.

Formula No. 24—Second Coat, Flat Finish
(*Repainting Inside Wood*)

(a) 100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil
—or—
(b) *100 pounds Dutch Boy white-lead
2 gallons pure turpentine
1 pint pale varnish (suitable for enamel)
½ pint pure drier

The preceding formula (a) makes 5 to 6 gallons of paint which should cover about 3,500 to 4,200 square feet, one coat; the second formula makes 5 gallons of paint which should cover about 3,000 square feet, one coat.

Formula No. 25—Second Coat, Egg-Shell Gloss Finish
(*Repainting Inside Wood*)

(a) 100 pounds Dutch Boy white-lead
1½ to 2 gallons Dutch Boy flatting oil
¾ gallon pale varnish (suitable for enamel)
—or—
(b) *100 pounds Dutch Boy white-lead
1½ to 2 gallons pure turpentine
¾ gallon pale varnish (suitable for enamel)
½ pint pure drier

The preceding formulas make 5 to 5½ gallons of paint which should cover about 3,000 to about 3,600 square feet, one coat.

Formula No. 26—Second Coat, Oil-Gloss Finish†
(*Repainting Inside Wood*)

(a) 100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
¼ gallon Dutch Boy flatting oil
1 pint pure drier
—or—
(b) *100 pounds Dutch Boy white-lead
3 to 3½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

The preceding formula (a) makes 6¼ gallons of paint which should cover about 3,750 square feet, one coat; the formula (b) makes 6 to 6½ gallons of paint which should cover about 3,600 to 3,900 square feet, one coat.

Special Interior Wood Finish. Sometimes an especially fine finish, unnecessary for ordinary conditions, is called for. Where this is the case the following steps should be taken:

1. The woodwork should be smooth, dry and cleaned of all dust before painting. Apply first a coat of orange shellac, thinned with good quality denatured alcohol. Let the shellac harden twenty-four hours and then sandpaper down. Apply a coat of paint mixed according to the following formula. (To insure whiteness, mix the lead with turpentine, 100 pounds to 2 gallons, and let it stand overnight or longer to settle. Then draw off the thinners from the top and bring to brushing consistency by adding turpentine and pale varnish.)

Formula No. 27—Body or First Coat Over Shellac
(*New Inside Wood*)

(a) 100 pounds Dutch Boy white-lead (drawing the oil, as in preceding paragraph)
2 to 3 gallons Dutch Boy flatting oil
—or—
(b) *100 pounds Dutch Boy white-lead (drawing the oil as in preceding paragraph)
1½ gallons turpentine
¼ gallon pale varnish (suitable for enamel)
¼ pint pure drier

The preceding formula (a) makes 6 gallons of paint and should cover about 3,600 square feet, one coat; the second formula (b) makes 4½ gallons of paint and should cover about 2,700 square feet, one coat.

2. Old woodwork should be rubbed smooth with sandpaper, steel shavings or steel wool until all gloss has disappeared. Then apply one coat of paint mixed according to Formula No. 27.

When the first coat on either new or old work is dry and hard, putty all defects such as knot-holes, dents, cracks, etc., with a white-lead putty composed of equal parts of white-lead and whiting.

3. From this point, new and old work should be treated alike. When first coat is dry, rub down with No. O sandpaper. Repeat coats of Formula No. 27 as many times as is necessary to bring the surface to clear white with no dark places showing thru.

4. Next make an enamel by adding Dutch Boy white-lead to pale varnish in the proportion of three pounds of white-lead to one gallon of varnish. Break up the white-lead with a little turpentine to a thick paste and mix well with the varnish. Apply as paint. After the enamel is dry, rub down with pumice in water and apply a second coat of the same enamel.

This completes full-gloss finish.

For silk finish rub down the last coat with fine pumice and water, clean off and finish with rotten stone and sweet oil. Polish finally with a chamois. (Or, expense and trouble of rubbing down last coat may be avoided by applying one coat of dull varnish.)

To obtain ivory effect, tint last coat with just enough raw sienna to turn it off the white, before applying enamel. The enamel coats must be tinted in like manner.

Antique or Old Ivory Finish for Interior Wood Trim. This effect is produced by brushing over an ivory colored ground a thin glaze composed of:

1 gal. Dutch Boy flatting oil
12 oz. burnt umber

Before this glaze has set up, it should be removed from the raised parts of the trim by wiping with a clean rag. The small amount of glaze remaining in the depressed portions gives the antique effect required.

Colored Interior Paint. The preceding formulas for interior painting on wood produce white paint. If colored paint is desired, the white paint can be tinted by the addition of proper tinting colors before all the thinners are added, as explained on page 6 under "Mixing the Paint." See also section on "Colored Exterior Paint" on page 8, which gives some valuable pointers on the selection and use of colors-in-oil, and formulas on page 13.

Staining Interior Wood. In staining new interior wood a very thin coat of liquid, composed of half linseed oil and half turpentine should first be applied as a foundation for the stain. If this precaution is not taken, the stain will strike in here and there, appearing dark in some spots and light in others. When the shellac is dry,

* Formulas marked with asterisks are alternates to be followed only if turpentine is to be used in place of Dutch Boy flatting oil.

† See note under Formula No. 22, page 17.

the stain selected can be applied over it.

Formula for Stain (Natural Wood)

(a) 2 quarts Dutch Boy flatting oil
2 quarts pure raw linseed oil
1 quart pure drier

—or—

(b) 2 quarts pure raw linseed oil
2 quarts pure turpentine
1 quart pure drier

To this stain may be added colors in oil, in the approximate proportions outlined below, to obtain the required color.

Cherry
2 lbs. burnt sienna
1 lb. raw sienna

If the burnt sienna has more of a brown than a fiery red tone, omit the raw sienna but use three pounds of burnt sienna instead of two.

Mahogany
2 lbs. burnt sienna
1 lb. rose lake
¼ lb. dropblack

Vary the proportion of dropblack to the depth desired for this stain.

Light Oak
2 lbs. raw sienna
½ lb. raw umber

If the raw sienna is inferior in staining power, omit the raw umber and use three pounds raw sienna.

Dark Oak
2 lbs. raw sienna
¾ lb. raw umber
Small amount burnt sienna

Walnut
2 lbs. burnt umber
or
a mixture of burnt sienna
and dropblack.

If the burnt umber is very dark, add one-half pound burnt sienna. If, however, the color of black walnut is desired, add instead one-half pound vandyke brown.

Graining. A ground should first be prepared in the usual way, applying three coats of paint prepared on formulas Nos. 18, 19 and 20, page 17. If the work has previously been painted, the priming coat (formula No. 18) may be omitted. The last two coats should be tinted, according to the wood to be imitated, as given below, by adding the colors-in-oil of approximately the amounts indicated:

Ground Colors

Cherry
6½ lbs. venetian red

Mahogany
10 lbs. french ochre
16 lbs. venetian red

Light Oak
1 lb. french ochre
¼ lb. medium chrome yellow

Dark Oak
7½ oz. medium chrome yellow
1¾ oz. venetian red
1/20 oz. lampblack

Walnut
6 lbs. french ochre
1 oz. venetian red
1 oz. lampblack

For graining colors the tinting materials given under "Staining," for the particular wood to be imitated, should be thinned to brushing consistency with

3 parts pure turpentine
2 parts pure raw linseed oil
1 part pure drier

This paint should be applied over the dry ground, and while it is still wet should be dragged, combed, or otherwise figured, in imitation of natural wood graining.

Painting Interior Floors. There are two kinds of floors that require painting—new floors laid with soft wood such as hemlock or white pine; old floors that have become worn, scratched, stained or otherwise marred. New floors of hard wood, such as oak, ash, maple or yellow pine may be painted, if desired, but waxing or varnishing or staining makes a handsomer finish.

Success with newly painted floors depends chiefly upon the choice of right materials and knowing how to use them. In fact, the only important particular in which the film of floor paint needs to differ from that on a window frame, door or the side of a house is the finish. The priming coat must anchor firmly into the wood, it must dry thoroly and the outer coat must become hard before the floor is used.

Note: For the procedure in preparing the surface and painting interior floors, both hard and soft wood, follow the directions given on pages 7 and 8, beginning with "Preparing the Surface."

What Colors to Use. The painted floor of a room should be of a color that does not readily show soiling or scratching or dust. The color should be neutral in tone so as to blend easily with rugs and draperies. It must make the room neither brilliant nor sombre. The range of available colors is thus narrowed down to certain shades of red, brown and green. The red should be rather dark and may have a suggestion of pink; the brown may be toned down with gray; the green should be on the dark olive order. All the tones should be soft rather than bright.

Personal taste, the exposure to sunlight, and harmony with adjacent colors are factors that should help determine the color chosen.

Other Finishes for Hard Wood Floors. For hard wood floors that are not to be painted, four kinds of treatment may be named—oiling, shellacking, varnishing and waxing. The processes overlap more or less and vary according to the kind of wood. The treatment selected should also depend upon the way the floor is to be used. A few fundamentals may be stated.

Open-grained hard woods, such as oak, birch, ash or walnut, should be treated first with a good silex paste filler. Close-grained hard woods, like maple or cherry, require no filler. Yellow pine, owing to the pitch it is likely to contain, should first have a thin coat of shellac to prevent the pitch from blistering later coats.

Good silex paste fillers may be purchased ready to apply. Or an excellent one may be made by mixing the finest silex, or silica, with equal parts of pure linseed oil, pure turpentine and best japan drier, so as to form a medium paste. Reduce this paste to a fairly thin mixture with turpentine only, allowing the filler to stand for a time. Brush across the grain of the wood with a stiff, stubby brush that will work the paste well into the pores. One coat makes a fair job, but two coats make a better

one, filling up the checks which the first coat did not fill.

After drying for an hour or somewhat less, rub the wood briskly across the grain with coarse burlap or excelsior to remove surplus filler left on the surface.

The purpose in using fillers is to fill the pores of open-grained wood, and to prevent darkening by the excessive absorption of varnish or other material used for the finish.

Oil Finish. Oiling, no doubt, is the most durable finish for a floor, tho it requires frequent going over. One effect of oil is to darken considerably the natural color of the wood. For a floor oil use three parts of pure boiled linseed oil to one part of turpentine. When boiled oil cannot be obtained take four parts raw oil, one part turpentine and one part drier. Stir frequently while using; apply with a strong, stiff brush; rub well into the wood. Clean off all surplus oil not taken up by the wood. An oiled floor should be wiped frequently with an oiled cloth. Oily rags are liable to take fire spontaneously and should be burned.

Shellac Finish. This treatment gives a fairly lasting finish if the floor is not to have very rough usage. Three or four coats of shellac, thinned down with good quality denatured alcohol, are recommended for either soft or hard wood floors. Sandpaper between coats. Rub down with oil and pumice stone on the last coat if a dull finish is desired.

Varnishing Floors. When a floor is to be varnished it is poor policy to try to save money on the varnish. A high-grade floor varnish, like kauri varnish, containing 100 pounds of hard resin to 20 gallons of oil, is none too good. Assuming that the wood has been suitably prepared as suggested above, and then sandpapered smooth, two or three coats of varnish should be applied, allowing ample time between coats for drying. If the film is thin it wears away too soon. A white shellac varnish, which dries quickly, is sometimes used. Varnish is the cleanest and most satisfactory finish if properly done, and it looks well so long as it does not become marred.

Wax Finish. Get from any paint store a floor wax of good quality and spread the wax on the floor in a thin coat. If wax is too hard to spread easily reduce it by mixing with turpentine. A good method of application is to place a small quantity of wax between two or three thicknesses of cheesecloth, forming a sort of bag. The wax will work thru the meshes of the cloth as it passes over the floor, thus insuring a thin, even coat. Allow 15 minutes for drying, then rub to a polish with a clean soft cloth, a weighted brush, or similar device. In an hour or two a second coat of wax should be applied the same as the first. To keep such a floor in prime condition requires frequent brushing or rubbing with a soft cloth, and a thin coat of wax about once a month. Waxing gives a beautiful finish, scratches on it are easily repaired and it tends least of all treatments to darken the wood or hide the grain. Waxed floors are smooth and likely to be slippery. Aside from this objection, and the constant care they require wax is recommended as the handsomest of all finishes.

Departments of Technical Paint Service and Decoration. If you have some special problem of a technical nature that is not covered in this book address your inquiry to us and our Departments of Technical Paint Service and Decoration will give it prompt attention.

If you wish decorative color suggestions for one or more rooms, follow instructions given on page 33.

CHAPTER IV

Brick, Stone, Concrete and Stucco Painting

Preparing Brick and Stone Surfaces. If any mortar has become loose and washed out, repoint all such damaged places with mortar or Portland cement before applying any paint. After priming, correct small defects in the surface with putty.

New brick should not be primed until dry. At least two or three days of dry weather should precede painting.

No painting should be done in cold weather.

Preparing Stucco or Concrete. Stucco, concrete work and the mortar in brick or stone work should be allowed to stand and dry at least a year before paint is applied. If painted within a year, it may be aged artificially by washing with a solution made by dissolving two pounds of zinc sulphate in one gallon of water or with ordinary carbonic acid water.

Boiled linseed oil should be used as specified wherever possible, especially on stucco and concrete. If boiled oil is not available, raw oil and a drier should be used.

Formulas for Brick and Stucco. For painting brick or stucco, apply three coats of paint mixed according to the following formulas:

Formula No. 28—Priming Coat

(*Brick and Stucco*)

100 pounds Dutch Boy white-lead
7 gallons pure boiled linseed oil (or 7 gallons pure raw linseed oil and 1½ pints pure drier)
1 gallon pure turpentine

The preceding formula makes 10¾ gallons of paint and should cover about 5,375 square feet, one coat.

Formula No. 29—Alternate Priming Coat

(*Often Preferred for Brick and Stucco*)

70 pounds Dutch Boy white-lead
30 pounds Dutch Boy red-lead
5 gallons pure boiled linseed oil (or 5 gallons pure raw linseed oil and 1 pint pure drier)
½ gallon pure turpentine

This formula makes 8½ gallons of paint and should cover about 4,885 square feet, one coat.

Formula No. 30—Second Coat

(*Brick and Stucco*)

100 pounds Dutch Boy white-lead
4 gallons pure linseed oil (1/3 boiled, 2/3 raw)
(or 4 gallons pure raw linseed oil and 1 pint pure drier)
1 gallon pure turpentine

This formula makes 7¾ gallons of paint and should cover about 4,650 square feet, one coat.

Formula No. 31—Third Coat

(*Brick and Stucco*)

100 pounds Dutch Boy white-lead
3½ gallons pure linseed oil (1/3 boiled, 2/3 raw)
(or 3½ gallons pure raw linseed oil and 1 pint pure drier)
1 pint pure turpentine

The preceding formula makes 6½ gallons of paint and should cover about 3,900 square feet, one coat.

Formulas for Concrete and Stone. Concrete and stone are not as porous as brick and stucco and should therefore be treated differently. Apply three coats of paint mixed according to the following formulas:

Formula No. 32—Priming Coat

(*Concrete and Stone*)

100 pounds Dutch Boy white-lead
5 gallons pure boiled linseed oil (or 5 gallons pure raw linseed oil and 1 pint pure drier)
1 gallon pure turpentine

This formula makes 8¾ gallons of paint and should cover about 4,375 square feet, one coat.

Formula No. 33—Alternate Priming Coat

(*Often Preferred for Concrete and Stone*)

70 pounds Dutch Boy white-lead
30 pounds Dutch Boy red-lead
4 gallons pure boiled linseed oil (or 4 gallons pure raw linseed oil and 1 pint pure drier)
½ gallon pure turpentine

This formula makes 7 gallons of paint and should cover about 4,025 square feet, one coat.

Formula No. 34—Second Coat

(*Concrete and Stone*)

100 pounds Dutch Boy white-lead
3 gallons pure linseed oil (1/3 boiled, 2/3 raw)
(or 3 gallons pure raw linseed oil and 1 pint pure drier)
½ gallon pure turpentine

This formula makes 6½ gallons of paint and should cover about 3,900 square feet, one coat.

Formula No. 35—Third Coat

(*Concrete and Stone*)

100 pounds Dutch Boy white-lead
3½ gallons pure linseed oil (1/3 boiled, 2/3 raw)
(or 3½ gallons pure raw linseed oil and 1 pint pure drier)
1 pint pure turpentine

This formula makes 6½ gallons of paint and should cover about 3,900 square feet, one coat.

Flat and Semi-Flat Finishes. Excellent flat and semi-flat finishes on brick, stone, concrete and stucco can be secured by applying over the second coat one or two coats of paint made with Dutch Boy white-lead and Dutch Boy flatting oil. For flat Milwaukee finish, the proportions should be 2 to 3 gallons of flatting oil to 100 pounds of white-lead. For egg-shell gloss finish, use 1½ to 2 gallons of flatting oil and ¾ gallon of spar varnish to 100 pounds of white-lead. For brick-red finish on outside brick, thin the color with Dutch Boy flatting oil.

Painting Concrete Floors. The foregoing priming coat for "Concrete and Stone"—formula No. 32—can be used in painting con-

crete floors, but the second and third coats must be made to produce a harder finish than is necessary in the case of concrete and stone walls, as floors are subjected to much more severe usage than walls. The following formulas will produce the hard finish needed:

Formula No. 36—Second Coat

(*Concrete Floors*)

100 pounds Dutch Boy white-lead
1 gallon pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

This formula makes 6 gallons of paint and should cover about 3,600 square feet, one coat.

Formula No. 37—Third Coat

(*Concrete Floors*)

100 pounds Dutch Boy white-lead
1 gallon pure raw linseed oil
1½ gallons pure turpentine
½ gallon floor varnish
½ pint pure drier

This formula makes 5¾ gallons of paint and should cover about 3,450 square feet, one coat.

After the priming coat is dry all cracks and other defects in the floor should be filled with a good putty. The putty should be firmly pressed into the cracks and smoothed over with a putty knife.

Two things to keep in mind thruout the work are: first, vigorous brushing to spread out each coat to the utmost; second, allowing each coat at least four days to dry. One cause of stickiness on floors is flowing the paint on so thick that it does not dry thoroly underneath, and then hurrying too much with the other coats.

The third coat should be tinted with a little lampblack to match the natural color of concrete.

Departments of Technical Paint Service and Decoration. If you have some special problem of a technical nature or wish suggestions in regard to some particular phase of decoration send your inquiry to us and our Departments of Technical Paint Service and Decoration will give it prompt attention.

CHAPTER V.

Metal Painting

Iron and steel will not rust at ordinary temperatures except in the presence of moisture. Contact of water and moist air with the metal is therefore the thing to be feared and if possible prevented.

Water and air are known as the primary causes of corrosion. To these must be added a number of secondary causes or accelerators of corrosion, such as rust itself, when it is loose enough to absorb and hold moisture; carbonic and other acids; neutral or acid salts in solution; roughness in the surface; foreign matter, such as scale on the surface; inequalities in surface conditions due to imperfectly made metal; stray electric currents.

Paint made of pure red-lead successfully combats these causes of corrosion. It is insoluble in water, unaffected by ordinary atmospheric gases, adheres closely to metal, and is a true rust preventive. Pure red-lead has excelled every other material in all kinds of tests, ancient and recent, both in the laboratory and in the field. Nearly all the railroads of the country use it for the protection of bridges and building skeletons. It is used on every vessel in the United States Navy, on gas holders and oil tanks, farming implements and machinery, tin roofs, pipes, water tanks and troughs; in fact, wherever metal needs protection against corrosion.

Red-Lead in Paste Form. Dutch Boy red-lead-in-oil is *pure* red-lead, exceedingly fine, highly oxidized, and ground to a workable paste in pure linseed oil. It mixes and spreads easily. It makes an elastic and durable covering that spreads far and sticks tight to metal. It meets the specifications of the navy and other particular users. It should always be used straight (i. e. without tinting pigments) next to the metal. Later coats may be tinted for inspection purposes or to give a desired finishing color. Dutch Boy red-lead can be readily tinted for second and finishing coats.

We also manufacture pure dry red-lead of the highest quality.

Dutch Boy red-lead-in-oil is sold in 12½, 25 and 50 pound steel pails and in 100 pound steel drums.

Our dry red-lead is sold in 12½, 25 and 50 pound steel pails; in 100 pound steel drums and in 250 and 500 pound wood casks.

Area Red-Lead Paint Will Cover. In estimating the quantity of red-lead paint needed for a job, the spreading rate to allow is 600 square feet to the gallon, one coat, altho paint made of Dutch Boy red-lead may be expected to do considerably better than this area. This figure, of course, is approximate at best, as the covering capacity of any paint varies somewhat according to consistency, how much "elbow grease" is put behind the brush and the condition of the surface being painted. For example, badly pitted and rough metal will take more paint than a perfectly smooth and clean surface. The variation in any case, however, will probably not be enough to throw off the calculations far.

Preparing the Surface. To obtain the best results with red-lead, care should be exercised in applying as well as mixing the paint. A vital point is to clean off all loose rust, dirt and foreign material before commencing to paint. Wire brushes and scrapers will be found to be effective in removing rust and scale. The sand blast will give good results and is strongly recommended, but thoro scraping and brushing will usually be satisfactory. Rust, the great enemy of iron and steel, is an accelerator of further rusting when it is loose enough to retain moisture. If it is allowed to remain it will work disaster even after the paint has been applied. Besides, rust and dirt are likely to cause peeling of the paint.

Have the surface as smooth as possible. It has been observed that highly polished steel plates corrode slowly, except at scratches, where they rust rapidly.

Number of Coats. Three coats of paint are necessary on all outside work if best results are to be obtained. Two coats will do for metal indoors. In no case will one coat of paint completely cover bare metal. To the naked eye, the metal may appear to be covered but under the microscope it is another story. Many small pinholes and air bubbles will be found. Even a second coat will not absolutely cover all these pinholes. A third coat is really necessary. Of course, the more the paint is brushed out, the more the pinholes and air bubbles are worked out. Plenty of good brushing effort is essential to a first-class job.

Mixing the Paint. Paint is made with Dutch Boy red-lead exactly as white-lead paint is made with white-lead paste, by simply adding linseed oil to the paste a little at a time and stirring constantly with a wooden paddle. Dry red-lead is mixed with oil in the same manner, the only difference being that it is less easy to incorporate with the oil.

If the paint is to be tinted, "break up" or soften the red-lead first with just enough linseed oil to make a workable paste; then add the coloring material and finally the remainder of the oil. If drier is to be used, put it in after the coloring material and before adding the final oil. (See white-lead mixing directions on page 6 which are similar.)

Applying the Paint. Steel and iron should never be painted during wet weather nor when covered with dew or frost. Early morning painting during the late summer months is not recommended as a usual thing. It is always better to wait until the sun has had time to dry everything out. It is bad practice to attempt painting in freezing weather.

Paint mixed from red-lead can best be applied with a pound or round brush. Be sure to use plenty of paint, covering the surface well and not attempting to make a gallon of paint go too far. Pay particular attention to bolts, rivet heads, edges and corners, as they are more subject to destructive influences than perfectly flat surfaces.

The priming coat is the most important. Extra care and precaution should be taken during its application.

Allow plenty of time between coats for the previous coat to dry thoroly. A week is not too long, especially for the priming coat.

Formula No. 38—Priming Coat

(*Exterior and Interior Metal*)

(a) 100 pounds Dutch Boy red-lead
2½ gallons pure linseed oil (see note p. 24)

—or—

(b) 100 pounds pure dry red-lead
3⅝ gallons pure linseed oil (see note below)

The first formula (a) makes 4⅝ gallons of paint and the latter (b) 5 gallons of paint, which should cover respectively about 2,750 and 3,000 square feet, one coat.

Formula No. 39—Second Coat (Light Brown)

(Exterior and Interior Metal)

(a) 100 pounds Dutch Boy red-lead
2⅝ gallons pure linseed oil (see note below)
12 ounces paste lampblack

—or—

(b) 100 pounds pure dry red-lead
3¾ gallons pure linseed oil (see note below)
13 ounces paste lampblack

The first formula (a) makes 4¾ gallons of paint and the latter (b) 5¼ gallons of paint which should cover respectively about 2,850 and 3,150 square feet, one coat.

The lampblack is added to the red-lead for the second coat to change the color of the paint to a light brown, which enables the painter to see readily if any places have not been covered properly. Moreover, a slightly shaded second coat facilitates the inspection of the final coat in the same way.

Formula No. 40—Third Coat (Dark Brown)

(Exterior and Interior Metal)

(a) 100 pounds Dutch Boy red-lead
3⅝ gallons pure linseed oil (see note below)
6 pounds paste lampblack

—or—

(b) 100 pounds pure dry red-lead
4¾ gallons pure linseed oil (see note below)
6½ pounds paste lampblack

The first formula (a) makes 6½ gallons of paint and the latter (b) 6¾ gallons of paint, which should cover respectively about 3,900 and 4,050 square feet, one coat.

Dark Finishes. Where a dark color is desired other than the browns secured by shading red-lead with lampblack, decorative finishes, such as greens and black, are obtainable by simply adding tinting materials to Dutch Boy red-lead.

Formulas for tinting Dutch Boy red-lead light and dark green and black follow:

Formula No. 41—Third Coat (Light Green)

(Exterior and Interior Metal)

100 pounds Dutch Boy red-lead
7½ gallons pure linseed oil (see note below)
31 pounds paste medium chrome yellow
24 pounds paste chinese blue

The preceding formula makes 12 gallons of paint, which should cover about 7,200 square feet, one coat.

NOTE: (a) If genuine boiled linseed oil is available, such as Dutch Boy boiled oil, we advise the use of one-third boiled oil and two-thirds raw oil. If raw oil only is used add one-half pint drier to every gallon of paint. (b) One-half pint of turpentine may be added to each two gallons of paint whenever it is deemed advisable to make the paint produced by any formula work more easily.

Formula No. 42—Third Coat (Dark Green)

(Exterior and Interior Metal)

100 pounds Dutch Boy red-lead
10½ gallons pure linseed oil (see note p. 25)
15 pounds paste medium chrome yellow
52 pounds paste chinese blue

This formula makes 18 gallons of paint, which should cover about 10,800 square feet, one coat.

Formula No. 43—Third Coat (Black)

(Exterior and Interior Metal)

100 pounds Dutch Boy red-lead
15 gallons pure linseed oil (see note below)
1 gallon pure turpentine
52 pounds paste lampblack
16 pounds paste chinese blue

This formula makes 25 gallons of paint, and should cover 15,000 square feet, one coat.

Intermediate shades of green and brown may be secured by varying the amount of coloring matter used. Where the formulas given are altered to any great extent, however, be sure that the amount of linseed oil used is increased or decreased accordingly.

Light Finishes. In cases where decorative finishes are desired other than the dark ones obtainable by tinting Dutch Boy red-lead, use pure white-lead and linseed oil, tinted, for the last two coats on exterior work and for the last coat on interior work. White-lead and linseed oil are especially adapted for use over red-lead and linseed oil because linseed oil dries much the same with the two pigments, and therefore makes a homogeneous film.

The following white-lead second and final coats will be found to give good results generally over a priming coat of red-lead:

Formula No. 44—Second Coat

(Exterior and Interior Metal)

100 pounds Dutch Boy white-lead
1½ gallons pure raw linseed oil
1½ gallons pure turpentine
1 pint pure drier

This formula makes 6 gallons of paint, which should cover about 3,600 square feet, one coat.

Formula No. 45—Third Coat

(Exterior and Interior Metal)

100 pounds Dutch Boy white-lead
3½ to 4 gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

This formula makes 6½ to 7 gallons of paint, which should cover about 3,900 to 4,200 square feet, one coat.

The final coat can be adapted to any tint desired by putting in the proper tinting materials and, where considerable additional tinting material is required, adding linseed oil and turpentine equal to one-half the weight of the tinting material.

Where white or an exceptionally light tint is desired, two coats of white-lead paint should also be used on interior work in order to obscure totally the red-lead undercoat. In such cases, apply the second as well as the final coat given above, adding about one ounce of lampblack to the second coat to throw it off the pure white. The practice of adding lampblack should be followed also for the second coat on exterior work if the finish is to be light.

A very attractive light gray, which will in one coat (if applied fairly heavy) hide the red-lead undercoatings, can be obtained with the following formula:

Formula No. 46—Third Coat
(Light Gray)
(Exterior and Interior Metal)

100 pounds Dutch Boy white-lead
4 ounces paste lampblack
8 ounces paste french ochre
4 gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

The preceding formula makes about 6¾ gallons of paint, which will cover about 4,050 square feet, one coat.

Painting Metal Ceilings. The color of red-lead may be objectionable for use on metal ceilings which are to be finished in white or a very light tint. In such a case, a white-lead priming coat, mixed as follows will be satisfactory.

Formula No. 47—Priming Coat
(Metal Ceilings)

100 pounds Dutch Boy white-lead
2 gallons pure raw linseed oil
1 gallon pure turpentine
1 pint pure drier

This formula makes about 6 gallons of paint, which should cover about 3,600 square feet, one coat.

The second coat should be mixed as follows:

Formula No. 48—Second Coat
(Metal Ceilings)

(a) 100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil
—or—
(b) *100 pounds Dutch Boy white-lead
½ gallon pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

The above formula (a) makes 5 to 6 gallons of paint, which should cover about 3,500 to 4,200 square feet, one coat. Formula (b) makes 5½ gallons of paint, which should cover 3,300 square feet, one coat.

If a flat finish is desired, the third or final coat should be made as follows:

Formula No. 49—Third Coat, Flat Finish
(Metal Ceilings)

(a) 100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil
—or—
(b) *100 pounds Dutch Boy white-lead
2 gallons pure turpentine
1 pint pale varnish (suitable for enamel)
½ pint pure drier

The above formula (a) makes 5 to 6 gallons of paint, which should cover about 3,500 to 4,200 feet, one coat. Formula (b) makes 5 gallons of paint, which should cover about 3,000 square feet, one coat.

If an eggshell finish is preferred, use the following:

Formula No. 50—Third Coat, Eggshell Gloss Finish
(Metal Ceilings)

(a) 100 pounds Dutch Boy white-lead
1½ to 2 gallons Dutch Boy flatting oil
¾ gallons pale varnish (suitable for enamel)
—or—
(b) *100 pounds Dutch Boy white-lead
1½ to 2 gallons pure turpentine
¾ gallons pale varnish (suitable for enamel)
½ pint pure drier

This formula makes 5 to 5½ gallons of paint, which should cover about 3,000 to 3,300 square feet, one coat.

Painting Galvanized Iron. No paint can be recommended honestly to stand up satisfactorily on galvanized iron at all times because the coating left by the galvanizing process has a tendency to repel paint. Sometimes the paint takes hold properly right away; other times considerable difficulty is encountered in making the paint adhere.

It has been the experience of practical painters that paint made of pure red-lead and linseed oil gives good results most consistently. The best results are obtained after the galvanized iron has been exposed to the weather at least six months.

Apply three coats of paint mixed according to the following formulas:

Formula No. 51—Priming Coat
(Galvanized Iron)

100 pounds Dutch Boy red-lead
3 gallons pure linseed oil (see note p. 24)
1 pint pure turpentine

This formula makes 5¼ gallons of paint, which should cover about 3,150 square feet, one coat.

Do not merely spread the priming coat upon the metal and expect it and succeeding coats to stick at all hazards. Brush the paint out well and use enough pressure to force it into every microscopic irregularity in the surface. Many an otherwise good job of painting on galvanized iron has gone wrong simply because the paint was not brushed on "close," as the painters say.

Formula No. 52—Second Coat
(Galvanized Iron)

100 pounds Dutch Boy red-lead
2½ gallons pure raw linseed oil
1 pint pure turpentine
2 to 4 ounces pure paste lampblack

This formula makes 4¾ gallons of paint, which should cover about 2,850 square feet, one coat.

Third Coat
(Galvanized Iron)

Mix the third coat similar to the second coat except where a decorative finish is desired other than the slightly shaded red-lead color. In the latter case, substitute one of the tinted red-lead finishing coats on pages 24 and 25, or use instead white-lead paint, tinted, mixed and applied in accordance with directions on pages 24 and 25.

Departments of Technical Paint Service and Decoration. If you have some special problem of a technical nature or wish suggestions for decorating a metal structure of any kind send your inquiry to us and our Departments of Technical Paint Service and Decoration will give it prompt attention.

* All formulas for the painting of metal ceilings which are marked with an asterisk are alternates to be followed only if turpentine is to be used instead of Dutch Boy flatting oil.

HANDY TABLE OF RED-LEAD DATA

TABLE D—(U. S. Measures)

Based on Dry Red-Lead Formulas with Dutch Boy Paste Red-Lead Equivalents

DRY RED-LEAD Formulas		DRY RED-LEAD Based on 100 Pound Keg		DUTCH BOY Paste Red-Lead EQUIVALENT Formulas Based on 100 Pound Keg	
Pounds of Dry Red-Lead to One Gallon of Linseed Oil	Gallons of Paint Resulting	Gallons of Linseed Oil to 100 Pounds of Dry Red-Lead	Gallons of Paint Resulting	Gallons of Linseed Oil to 100 Pounds of Dutch Boy Paste Red-Lead	Gallons of Paint Resulting
40	1.55	2.50	3.87	1.492	3.616
35	1.48	2.86	4.23	1.824	3.948
33	1.45	3.03	4.40	1.988	4.112
32	1.44	3.125	4.49	2.076	4.200
31	1.42	3.23	4.60	2.171	4.295
30	1.41	3.33	4.70	2.271	4.395
29	1.40	3.45	4.82	2.379	4.503
28	1.38	3.57	4.94	2.494	4.618
27	1.37	3.70	5.07	2.617	4.741
26	1.36	3.85	5.22	2.750	4.874
25	1.34	4.00	5.37	2.894	5.018
24	1.33	4.17	5.54	3.050	5.174
23	1.32	4.35	5.72	3.219	5.343
22	1.30	4.55	5.92	3.404	5.528
21	1.29	4.76	6.13	3.606	5.730
20	1.27	5.00	6.37	3.829	5.953

Weight of one gallon of Dry Red-Lead, 73 pounds.
Weight of one gallon of Dutch Boy Paste Red-Lead, 47 pounds.

HANDY TABLE OF RED-LEAD DATA

TABLE D—(U. S. Measures)

Based on Dry Red-Lead Formulas with Dutch Boy Paste Red-Lead Equivalents

FOR A GALLON OF PAINT Made with Paste Red-Lead Use		COMPOSITION OF PAINT Made from Either Dry Red-Lead or Dutch Boy Paste Red-Lead			
Pounds of Paste Red-Lead	Fraction of a Gallon of Linseed Oil	Pounds Dry Red-Lead in Each Gallon	Weight of Each Gallon (POUNDS)	Quantity of Linseed Oil in Each Gallon (GALLONS)	Approximate Quantity of Linseed Oil in Each Gallon (PINTS)
27.7	0.41	25.8	30.8	0.65	5¼
25.3	.46	23.6	28.9	.68	5½
24.3	.48	22.7	28.1	.70	5½
23.8	.49	22.2	27.6	.70	5½
23.3	.50	21.2	27.2	.70	5½
22.8	.52	21.3	26.8	.71	5¾
22.2	.53	20.8	26.3	.71	5¾
21.7	.54	20.3	25.9	.72	5¾
21.1	.55	19.7	25.4	.73	6
20.5	.56	19.2	24.9	.74	6
19.9	.58	18.6	24.3	.74	6
19.3	.59	18.1	23.9	.75	6
18.7	.60	17.5	23.4	.76	6
18.1	.62	16.9	22.9	.77	6¼
17.5	.63	16.3	22.3	.78	6¼
16.8	.64	15.7	21.8	.79	6¼

Weight of one gallon of Dry Red-Lead, 73 pounds.
Weight of one gallon of Dutch Boy Paste Red-Lead, 47 pounds.

CHAPTER VI

Miscellaneous Painting

Painting Automobiles, Carriages and Wagons. The best way to paint automobiles, carriages and wagons, and the oldest, too, is by the "lead-in-oil" method. By this process a film is secured that is tough enough to stand the abrasive force of sand and dirt and elastic enough to stand the jars and jounces to which a vehicle in service is constantly subjected.

Before explaining the lead-and-oil process there are two cautions: First—purchase only materials bearing the name of a manufacturer known to be reliable. Second—do all your painting and varnishing in a room that is clean and free from dust and maintain thruout an even temperature of about 60 to 80 degrees Fahrenheit.

If the old paint is loose and flaky there is no recourse other than to scrape or burn it off and build up anew from the metal or wood. The body and running parts of a vehicle are painted differently and should be treated separately in the order named. (See page 28 for touching-up job.)

Body. In vehicle painting, as in all other kinds of general painting, the priming coat is of great importance, for a faulty priming may result in the ruination of the entire job. Ring checks, fissures and decayed finish are often directly traceable to neglect at this early stage.

Priming Automobile Bodies. For the priming coat on automobiles or the steel body of any other vehicle, paint made of pure red-lead is recommended. Mix the paint on the basis of one hundred pounds Dutch Boy red-lead, three gallons pure linseed oil and one gallon pure turpentine. If boiled linseed oil is obtainable, use one-third boiled oil and two-thirds raw oil. If raw oil only is used, add one-half pint drier to every gallon of paint.

Brush the paint out well so as to leave a very thin coat.

Priming Bodies of Wood. For priming the bodies of carriages and wagons use strictly pure white-lead, tinted with a little lampblack, and thinned with a mixture of two parts raw linseed oil and one part turpentine on the basis of fourteen pounds of white-lead to one gallon of oil. Apply with a good brush, brushing the paint well into the pores.

Lead Foundation. In the case of automobiles as well as carriages and wagons let the priming coat dry two or three days and then sandpaper down with No. ½ sandpaper. The dust from sandpapering is more or less poisonous and should not be breathed. It is practicable to wet ordinary sandpaper in good, heavy mineral turpentine (not benzine), flash point 100° or over. If the modern, water-proof sandpaper is used, it may be wet with water. Dust off well, removing every loose particle of paint, and follow with a coat of white-lead tinted with a small amount of lampblack, a little finishing varnish and some gold size japan. This should make a fairly thick paste. Thin down with turpentine and apply one good coat with a clean, white bristle, chisel-edged brush of good quality. Allow plenty of time to dry thoroly.

The next coat is known as "knifing lead" and is made either with (a) dry white-lead two-thirds, paste white-lead one-third, mixed with rubbing varnish and japan, equal parts; or (b) dry white-lead mixed with rubbing varnish and japan, equal parts. Apply either paste smoothly and evenly all over, using a putty knife with a blade about 2¾ inches wide.

Allow sufficient time to dry and then putty up all rough spots and flush all nail holes with a stiff putty made of equal parts of dry white-lead wet with quick rubbing varnish and coach japan.

For the next coat, the final lead foundation, prepare some paste white-lead, tinted with a small quantity of lampblack, a little quick rubbing varnish and the same amount of coach japan. Thin the resulting paste with turpentine and put on one coat.

Roughstuff. Next comes what is known to the trade as "roughstuff." There are numerous formulas for roughstuff, but the following good old-fashioned formula still seems to be best. Knead three parts of good American filler to a thick paste with one part of paste white-lead, tinted with a little lampblack, and equal parts of quick rubbing varnish and coach japan. Thin with turpentine. With a good bristle brush lay on three coats alternately in transverse directions, allowing enough time between coats for the previous coat to dry. Two coats per day can be safely applied.

Guide Coat. After the final coat of roughstuff comes the guide coat, made of yellow ochre wet to a paste with one part rubbing varnish and one part coach japan. Thin down with a little turpentine; just enough to make a spreadable paint. Apply a heavy coat over the roughstuff and leave two days to dry. Time allowed for this purpose is well spent.

In the meantime get ready for rubbing or cutting down the guide coat to a slick, glass-like surface. Some block pumice stone, a couple of buckets of water, chamois and sponges will be needed. Break or saw the pumice stone into various sizes and shapes and use the lightest and most open pieces first because they cut more rapidly than the denser ones. Wet the pumice with water and rub until the guide coat disappears. Do not forget the inside of the job. Wash off clean with a sponge and dry with a piece of chamois. Let the job stand two hours and then proceed with the next step—the color coat.

The Color and Varnish Coat. Confine the color combination to two colors, one for the body and another for the gear, with the addition perhaps of another color, for striping. Neat quiet effects, like black and red, are always in good taste and desirable.

The necessary coach colors may be obtained in air-tight tins, ground in "grinding-japan," instead of oil, and loaded nearly to the point of saturation with lead and manganese. Add enough finishing varnish to form a paste and thin down with turpentine. Apply one coat with a camel's-hair brush. The job is now ready to stripe.

Striping. Rub down the work all over with fine, white curled hair before striping. Do not attempt any elaborate designs. Simply run on a few lines of some harmonizing color which will serve to intensify the beauty and brilliancy of the main color field.

Finishing Coats. As soon as the stripes are dry, go over the job lightly with a wet sponge

and wipe off with a damp chamois. After washing up flow on two coats of the best finishing varnish and the job is finished. This varnish gives a brilliant, hard, elastic, durable finish.

Running Gear. The steps taken in painting the body are followed in painting the running parts of a vehicle except that the three rough-stuff coats are omitted entirely and one coat of body varnish is sufficient.

Touching-Up Job. In cases where the old paint film is intact and where only the varnish has fissured or perished a quicker method than the foregoing may be used. For a cheap or touching-up job proceed as follows: Clean parts thoroly, removing all traces of grease, dirt and grit with scrapers and wire brushes. Give the body and gear a light rubbing with powdered pumice and water, touching up the bare spots with a coat of lead color. Follow with one coat of flat color, one coat of color and varnish, and one coat of finishing varnish.

If the paint on the vehicle you desire to paint is still firm, but cracked in places, go over the surface with glazing putty before applying the float coat.

Painting Boats. The practice in painting boats is regulated largely by one thing—the type of craft.

If a boat is a yacht or a launch, the owner aims to keep it always clean and bright. Its appearance is a matter of pride with him. Hence the handsomest job obtainable is none too fine, and coat upon coat of paint is often applied in order to get an unusually nice finish.

A rowboat, on the other hand, is not a show boat. While the possessor of one or a fleet of them wants a job that looks well, only an ordinarily good finish is called for.

When it comes to canoes an altogether different problem is presented. A high-class finish is wanted, but it is not obtained in the same way, because a canoe is usually built of canvas.

For present purposes, therefore, boats have been classified into three groups: Power and Sail Boats; Row Boats; Canvas Canoes. In this order, directions for painting them are taken up.

Power and Sail Boats. The outside of the hull, deck-house and some parts of the interior are proper subjects for the paint brush. Some of these parts should receive attention at least every year.

Preparing the Surface. If the wood is new, dust it off carefully and cover all knots and sappy streaks with orange shellac. The shellac can be made by thinning dry orange gum shellac with pure grain or denatured alcohol, proportioned on the basis of four pounds of shellac to one gallon of alcohol. Brush the shellac on thin. If it is put on too thick the paint will alligator, leaving the knots bare.

Painting the Hull. Prime the new wood with a thin coat of paint mixed as follows:

Formula No. 53—Priming Coat
(Boat Exterior)

100 pounds Dutch Boy white-lead
4 gallons pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

This formula makes 9 gallons of paint which should cover about 5,175 square feet, one coat.

Where less paint is required than the quantity which the foregoing formula and those following make, divide the number of gallons given by the number of gallons wanted; then divide the quantities of ingredients by the result. For example: When only 4½ gallons of paint, mixed according to the preceding formula, are needed, divide 9 by 4½ and the resultant 2 into the quantities of ingredients. This changes the formula to fifty pounds of white-lead, two gallons of linseed oil, one gallon of turpentine and one-half pint of drier.

If more paint than a formula makes is required, divide the number of gallons needed by the number given; then multiply the quantities of ingredients by the result.

After the priming coat has dried thoroly, fill all cracks, nail-holes, dents and other defects in the surface carefully with putty. The hardest and most serviceable putty is that based on white-lead. It should consist of equal parts of Dutch Boy white-lead and whiting, mixed to the proper consistency with linseed oil.

Use sandpaper to smooth down the rough places. Then apply a second coat of paint, mixed as follows:

Formula No. 54—Second Coat
(Boat Exterior)

100 pounds Dutch Boy white-lead
1¼ gallons pure raw linseed oil
1¼ gallons Dutch Boy flatting oil or pure turpentine
1 pint pure drier

This formula makes 5½ gallons of paint which should cover about 3,000 square feet, one coat.

Repeat the second coat as many times as desired. Many boatmen put on five or six coats very thin. Without question this is the best practice, as a number of thin coats produce much better results than the same thickness of film produced by putting on two or three thick coats.

Finish with a coat of paint mixed as follows:

Formula No. 55—Finishing Coat
(Boat Exterior)

100 pounds Dutch Boy white-lead
½ gallon spar varnish
2 gallons Dutch Boy flatting oil or pure turpentine

This formula makes 5½ gallons of paint which should cover about 3,300 square feet, one coat.

The preceding formulas give a "flat" or dull finish, which wears much better under exposure to the water than a glossy paint rich in oil.

Painting Deck, Spars and Outside of Cabin. Use the same formulas for the priming and body coats on the deck, spars and outside of the cabin as for painting the hull. Then apply the following finishing coat. Be sure to allow plenty of time between coats for the preceding coat to become dry.

Formula No. 56—Gloss Finishing Coat
(Boat Exterior)

100 pounds Dutch Boy white-lead
3½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

This formula makes 6½ gallons of paint which should cover about 5,900 square feet, one coat.

Painting the Interior. New woodwork inside of cabins, saloons, etc., should first receive a thin coat of good orange shellac, thinned with

good quality denatured alcohol. Sandpaper the shellac when dry. Putty all nail-holes and joints. Then apply a priming coat mixed as follows:

Formula No. 57—Priming Coat

(Boat Interior)

100 pounds Dutch Boy white-lead
2 gallons Dutch Boy flatting oil or pure turpentine.
½ gallon pure raw linseed oil
½ pint pure drier (If turpentine is used make it a pint of drier)

The preceding formula makes 5½ gallons of paint which should cover about 3,150 square feet, one coat.

Follow with a body coat, mixed as follows:

Formula No. 58—Second Coat

(Boat Interior)

100 pounds Dutch Boy white-lead
2½ gallons Dutch Boy flatting oil or pure turpentine. (If turpentine is used add ½ pint pure drier)
1 pint pale varnish (suitable for enamel)

This formula makes 5½ gallons of paint which should cover about 3,300 square feet, one coat.

If an egg-shell gloss is desired, apply a finishing coat mixed as follows:

Formula No. 59—Finishing Coat Egg-Shell Gloss

(Boat Interior)

100 pounds Dutch Boy white-lead
2½ gallons Dutch Boy flatting oil or pure turpentine. (If turpentine is used add ½ pint pure drier)
½ gallon pale varnish (suitable for enamel)

This formula makes 6 gallons of paint which should cover about 3,600 square feet, one coat.

If a gloss finish is desired, the finishing coat should consist of three pounds of Dutch Boy white-lead, made into a thick paste with turpentine, and thinned with one gallon of pale varnish. Mix well and apply the same as any other paint.

Tints. The finishing coats specified for the hull, the deck, the spars and the outside and inside of the cabin make white paint. Where a colored paint is desired, tint the final coat in each case as directed on pages 8 and 12.

Painting Metal Parts. Iron and steel hulls, masts or other metal parts of a vessel should be painted with two coats of Dutch Boy red-lead, thinned according to the following formula:

Formula No. 60

(Metal Work on Boats)

100 pounds Dutch Boy red-lead
2½ gallons linseed oil (see note below)

This formula makes 4½ gallons of paint which should cover about 2,700 square feet, one coat.

On ornamental parts, finish with white-lead tinted to suit. (Refer to page 24, paragraph headed "Light Finishes.") Below the water-line, finish with anti-fouling paint, if desired.

Repainting. In repainting, use the same formulas given for painting new work, except that the priming or first coat can be omitted. Old coats should be well smoothed down and the surface should be perfectly dry before new coats are applied.

Row Boats. Do not attempt to paint immediately after taking the boat from the water. Let it dry out thoroly, for no matter how good a paint is it will not stick to a wet or damp surface.

Neither will paint adhere properly to a boat's bottom that is covered with dirt, water plants, marine animals and other foreign matter. Clean off all such accumulation by scraping or scrubbing.

Stop up all leaks before applying any paint. Cracks and seams can be filled up with caulking cotton soaked in thick white-lead, nail-holes with bits of pine, and very small leaks with white-lead paste.

Paint applied over an uneven surface is bound to present a bad appearance. Where the old paint is rough, sandpaper it down smooth and touch up all bare spots before applying the first coat.

After heeding the foregoing directions, apply two coats of paint, inside and outside, mixed according to the following formula:

Formula No. 61

(Row Boats—Exterior and Interior)

25 pounds Dutch Boy white-lead
½ gallon pure turpentine
½ pint spar varnish

This formula makes 1¼ gallon of paint which should cover about 750 square feet, one coat.

If a colored paint is wanted, tint the last coat. The addition of a very little lampblack or drop-black will produce a gray. A little chinese blue will make a light blue. (For other colors follow tinting directions on page 8, using only one-quarter of the quantity of ingredients called for, as formula No. 61 is based on 25 pounds of white-lead instead of 100 pounds.)

The finish produced by two coats of paint mixed according to formula No. 61 will be "flat" or dull. If a gloss finish is desired, use for the last coat three pounds of white-lead made into a thick paste with turpentine and thinned to spreading consistency with one gallon of pale spar varnish.

Canvas Canoes. When the paint is so badly cracked and broken that the canvas shows thru in places, it is best to remove the old coat entirely by means of a paint remover and start anew. After the old paint is off, sandpaper the surface and apply a coat of paint composed of:

Formula No. 62

(Canoes)

4 pounds Dutch Boy white-lead
1 pint pure turpentine
1/3 pint spar varnish
1/6 gill pure drier
Tint as desired.

The above formula should make enough paint for the first coat on one canoe. Put the paint on thick and work it well into the canvas by careful brushing. When dry, sandpaper the surface and then apply two coats of japan color thinned with spar varnish and just enough turpentine to make the paint brush out smooth. One pint of japan color and one pint of varnish should be sufficient to do the work.

If the old paint on a canoe is in good condition, the white-lead paint need not be applied. Simply sandpaper the old coat down smooth and apply the two coats of japan color and varnish.

NOTE: If genuine boiled linseed oil is available, such as Dutch Boy boiled oil, we advise the use of one-third boiled oil to two-thirds raw oil. If raw oil is used, add one-half pint japan drier to every gallon of paint.

To refinish the inside of a canoe, sandpaper the old varnish thoroly and put on one coat of good spar varnish. One pint of varnish should be sufficient.

Patching. To mend a hole in a canoe, insert a piece of canvas beneath the torn part, pasting the patch on with a little white-lead, and clinching it to the ribs of the canoe with brass or copper tacks. Very small holes can be fixed by plugging them with white-lead stiffened slightly with whiting.

Departments of Technical Paint Service and Decoration. If you have some special problem of a technical nature or wish suggestions in regard to some particular phase of decoration, address your inquiry to us and our Departments of Technical Paint Service and Decoration will give it prompt attention.

CHAPTER VII

General Painting Facts

Simplified Mixing Directions. There are many jobs of painting for which only a comparatively small amount of paint is needed. For jobs of this kind, mix your paint according to the following simplified directions:

Gloss Paint. Paint which gives a gloss finish is used for practically all exterior painting. To make gloss paint, the white-lead is mixed with pure linseed oil, turpentine and drier. For average purposes, the white-lead and liquid portions of the paint should be about equal in bulk, the liquid portion, if any difference, being slightly in excess.

The simplest way to mix the paint is as follows: 1. Take half as much white-lead as the quantity of paint needed, completely filling the measure. 2. Empty the white-lead into a pail or other suitable paint pot large enough to hold three times the amount of the white-lead. 3. Fill vessel used to measure out the white-lead one-fifth full with turpentine. 4. Fill up remaining four-fifths of vessel with pure raw linseed oil and stir. 5. Pour a little of the liquid (not more than a pint) into the white-lead and stir it in well. When well mixed, stir in a little more and so on until all the liquid is mixed into the white-lead. 6. Stir in liquid turpentine drier to the amount of about one tablespoonful (or one-eighth of a gill), to each pint of oil used. 7. Strain thru cheesecloth.

You now have good heavy paint which is suitable for a gloss finishing coat. If for any reason a thinner paint is wanted, pour some of the heavy paint into another paint pot and thin it with linseed oil and turpentine. Thus, for priming new unpainted wood increase the amount of paint by half with a mixture of linseed oil and turpentine, using two parts linseed oil and one part turpentine.

Flat Paint. Where a dull or so-called "flat" finish is desired, as for interior decoration on either woodwork or plaster walls, a flatting liquid instead of linseed oil should be mixed with the white-lead. The best material for this purpose is Dutch Boy flatting oil, but turpentine may be used if the other cannot be obtained. Dutch Boy flatting oil comes in one and five-gallon cans. It produces a flat finish which is remarkable for its beauty and washability.

To make flat paint, just mix together equal parts of white-lead and flatting oil (or turpentine). Pour the flatting liquid into the white-lead a little at a time, stirring thoroly before adding each additional quantity. If turpentine is used, finally add one tablespoonful of drier for each pint of paint. If Dutch Boy flatting oil is used, add no drier.

Flat paint, mixed as directed above, can be used for undercoats as well as the finishing coat on woodwork and for the second and third coats on plaster. For the priming coat on plaster, it is better to use boiled linseed oil with the white-lead because the plaster often has so-called "fire-cracks" in it which appear later as fine, dull lines to mar the beauty of the finished surface. Boiled linseed oil seals these cracks better than other thinners. If boiled linseed oil cannot be obtained, use raw linseed oil. It is just as good in a great many cases, but it will not seal fire-cracks so well. In case raw oil must be used, put in some liquid drier, a tablespoonful to every quart of oil, after the paint is all mixed. Stir it in well.

Tinting One Gallon of Paint. One of the special advantages of making paint from white-lead is that it can be colored to the exact tint you want simply by adding tinting colors ground-in-oil.

The more commonly used colors-in-oil may be purchased in one and five-pound cans or in small tubes at most paint and hardware stores. Where there is only an ounce or so of tinting material needed, it may be found convenient to buy the tubes of color, but whenever considerable quantities are needed it is advisable to purchase the color in cans for these are, compared to the tube colors, much lower in price.

If difficulty is experienced in obtaining the chinese blue called for in the formulas, prussian blue may be substituted.

In buying colors-in-oil, specify exactly the color desired. It is not sufficient to say "chrome yellow." Medium chrome yellow, the most commonly used, is a deep yellow. Lemon chrome yellow is a lighter, more greenish yellow.

"Chrome green" might mean any one of the three chrome greens—light, medium or dark. Of these, medium chrome is most satisfactory for general use since it can, by the addition of a little chinese blue and lampblack, be substituted for dark chrome green, or by the addition of a little lemon chrome yellow will answer the purpose for light chrome green. If medium chrome green is not easily obtainable it can be made up by mixing lemon chrome yellow and chinese or prussian blue. It is advisable, however, to use the straight green when possible.

Various grays can be produced by adding lampblack to white-lead. If no black tinting material is at hand, a gray can be produced by using a little chinese blue and venetian red. A gray produced by using lampblack and white-lead may be made warmer by the addition of small amounts of french ochre, venetian red or medium chrome yellow, and may be made cooler by employing a little chinese blue in the mix.

Formulas for securing a number of popular colors are listed below. These formulas give the amount of color-in-oil required to tint one gallon either of gloss paint or flat paint made with white-lead. A lesser or greater quantity of paint may be tinted to the desired color simply by decreasing or increasing proportionately the amount of color-in-oil called for by the formula.

Tint	*Colors-in-Oil*	*Gloss Paint*	*Flat Paint*
Pink	Venetian Red	1⅛ oz.	1½ oz.
Light Blue	Chinese Blue	½ oz.	¾ oz.
Light Green	Med. Chrome Green.	9¾ oz.	13 oz.
Green	Med. Chrome Green.	2 lbs.	2¾ lbs.
Cream	Lemon Chr. Yellow..	⅛ oz.	1/6 oz.
Yellow	Lemon Chr. Yellow..	4¼ oz.	5¾ oz.
Buff	Med. Chrome Yellow	2¾ oz.	3¾ oz.
Light Drab	Burnt Umber	1½ oz.	2 oz.
Dark Drab	Burnt Umber	5 oz.	6¾ oz.
Light Gray	Lampblack	½ oz.	¾ oz.
Dark Gray	Lampblack	1¼ oz..	1¾ oz.

A little venetian red added to any of the above colors except the greens will give a warmer tint. In the case of the greens, the warmer effects are secured by adding yellow. If a colder color is desired, add a little chinese

blue to the pink, greens, drabs and grays and a little chrome green with a touch of blue to the cream, yellow and buff. To soften or gray a color, add a little lampblack. To lighten a color, simply use less color-in-oil or more white-lead; to darken it, add more color-in-oil.

As colors-in-oil of different manufacturers vary in strength, the foregoing formulas are at best only approximate. Therefore, add the color-in-oil gradually (stir in a drop or two at a time) and stop when the desired tint is reached, even if the formula calls for more. So also, if the tint is too light, add more colors-in-oil until the tint is exactly right. Before adding the tinting colors thin them to about the same consistency as the white paint with linseed oil, flatting oil or turpentine, depending upon whether gloss or flat paint is being used.

How Much Paint to Make. One pound of white-lead paste, thinned as directed under "Gloss Paint" and "Flat Paint," will make about one-half pint of paint or enough to cover about forty square feet of surface, one coat. Other quantities will cover as follows:

Pounds of White-Lead	*How Much Paint It Makes*	*Square Feet It Covers*
5	2½ pints	185
12½	3 quarts	450
25	1½ gallons	900
50	3 gallons	1800
100	6 gallons	3600

How Many Coats. Three coats of white-lead paint are recommended for unpainted wood, inside as well as outside. Many try to make two coats do, but it is mistaken economy. The third coat adds only one-third to the cost and makes twice as good a job. That is, it will look better and last much longer.

Two coats are sufficient in repainting wood if the old paint is in good condition as it serves as a priming coat. Sometimes one coat will be found sufficient.

New plaster should not ordinarily be painted until it has dried and set for six months. If necessary, however, the walls can be artificially aged by applying a coat of zinc sulphate solution made in the proportion of two pounds of zinc sulphate to a gallon of water.

When painting new plaster walls, three coats should be used. Two coats should be used when old plaster walls are to be painted a different color from the old paint.

Time Between Coats. Allow plenty of time between coats for the paint to dry. Exterior work should be allowed to dry from two to four days before the next coat is applied and interior work at least twenty-four hours.

How to Make Putty. The best putty is made of equal parts of white-lead and whiting, softened with linseed oil. Good painters use no other kind.

Making Joints Tight. White-lead or red-lead paste, just as it comes in the tin or keg, is excellent for making pipe joints gas-tight, water-tight and air-tight. Good plumbers and gas-fitters white-lead or red-lead all joints.

Raw and Boiled Linseed Oil. Raw linseed oil with a drier is somewhat better than boiled linseed oil for paint to be used on wood, but boiled linseed oil without drier may be used if desired. The results will be quite satisfactory. Boiled linseed oil is particularly desirable for paint to be used on metal, plaster, concrete and stucco. In speaking of boiled linseed oil the reference is to *genuine boiled oil.* A variety of oil is sometimes sold as boiled oil which is nothing more than raw oil to which drier has been added. The danger that this so-called "bung-hole boiled" oil may have been made with poor drier or too much drier, makes it preferable to buy raw linseed oil and put in your own drier, in case genuine boiled oil is not obtainable.

Linseed Oil in Sealed Cans. For those who like to buy a guaranteed product, in neat sealed packages, we recommend Dutch Boy pure linseed oil in sealed cans. This oil is pure, well settled and superior in every way. It comes in one and five gallon cans, which are sealed at the spout to prevent tampering and bear the Dutch Boy Painter trademark as a guaranty of purity. Bv buying linseed oil in this way it is possible to be sure of best quality of pure linseed oil at a cost not exceeding a few cents additional for every gallon of paint—a very small amount to pay for insurance that you are getting pure, high quality oil. The one-gallon cans are packed six to a wooden case. The five-gallon cans are packed one to a wooden case.

Brushes and Their Care. The "pound" or round brush is considered the best brush for applying the paint on the body of the house or other places where there is plenty of room to spread the paint.

The smaller brushes—trimming or sash brushes they are called—are used for painting sash corners, crevices and other parts too small to permit the use of the body brush.

These brushes both come in round and flat shapes. The choice between the two is a matter of personal opinion, altho the old painters use the round brush, claiming that with the flat brush one is likely to allow the paint to flow rather than brush it in.

In no case are cheap brushes economical. The best brushes are made of bristles, while the cheaper brushes are made of horse-hair and lack the toughness, strength, elasticity or spring, wearing quality and absorbing or paint-holding power of bristle.

There are grades, too, of bristle, and the painter should be careful not to get a brush with soft and flabby bristles, as a brush of this kind will not spread the paint properly. When this happens one is likely to waste more paint than the saving amounts to in the cost of the brush, to say nothing of the bad results obtained in the painting itself.

The amount of wear that a brush will give depends as much upon its care as upon its use. A brush which receives proper care will outlast two that receive none. Under no circumstances allow the paint in a brush to dry and harden. When the paint in a brush is allowed to become hard, it is almost impossible to clean the brush and the bristles will never be the same thereafter. Usually it is cheaper to throw away such a brush than to attempt to reclaim it.

Brushes can be cleaned by steaming them, soaking them in turpentine or benzine and then washing them out with ordinary soap and hot water. It is good practice also to straighten out the bristles with a comb and when dry to wrap brushes carefully in moisture-proof paper before putting them away.

The value of a brush depends to a large extent on the springiness of its bristles. Once the bristles become soft and flabby, its usefulness is impaired. Putting a brush in water will

soon cause the bristles to lose their springiness. For this reason, never keep a brush in water in the hope of keeping it in good condition. When you want to use a brush succeeding days, suspend it in the paint which you have been using or in linseed oil. Never stand a brush on its bristle ends but suspend it in the paint or oil. This may be done by drilling a small hole in the handle of the brush near the top of the ferrule, putting a wire thru the hole and laying the wire across the top of the paint or oil container. Some brushes come with the hole already in them.

Keeping Pigment Soft. Unused portions of a keg of Dutch Boy white-lead or Dutch Boy red-lead may be kept soft and free from skins by pouring linseed oil over the surface to the depth of an inch or more, and keeping the lid on the keg. First of all, however, the lead should be scraped down from the sides of the keg. When the material is to be used frequently it may be more convenient to cut a disk of paper to fit inside the keg and lay it on the lead.

Advantages of Steel Kegs. Dutch Boy white-lead and Dutch Boy red-lead are packed in steel kegs. The kegs come in four sizes, 12½, 25, 50 and 100 pounds. Each keg is drawn by heavy machinery from a single piece of steel. The kegs are therefore seamless and practically indestructible.

The smaller sizes, 12½'s, 25's and 50's, have sloping sides and are fitted with bails. They make the best paint pot a painter could have. As sloping sides would prevent the keg rolling straight when turned on its side, the large, 100-pound keg has parallel sides.

The advantages of packing white-lead and red-lead in steel kegs are many. Among them are the following:

First, the steel keg keeps the contents in perfect condition until used. There are no pores to absorb the oil and leave the lead next the sides of the keg dry and caked.

Second, every bit of white-lead or red-lead can be easily taken out of our steel keg. This is most difficult if not absolutely impossible to accomplish in the case of a wooden keg.

How to Open Steel Kegs. The opening of the smaller sizes, 12½, 25 and 50 pound kegs, is very simple. First, pry the lugs of the lid outward with a screw-driver until clear of the reinforcing wire of the rim. Second, tap the straightened lugs outward with a hammer and the lid will come off. (The process is easier if the pail is turned upside down first.)

The 100 pound keg has six crimps which are pressed in the edge of the cover under the wire which reinforces the chime, thus locking it very securely on the inside. These crimps are drawn back by striking the cover sharply. Instead of letting the hammer strike the head squarely, let it strike somewhat on its edge so that the blow will draw the crimped edge from under the wire rather than merely drive it downward. The outer edge of the cover which curls downward over the reinforced edge of the keg is held there by friction. This friction is overcome by tapping the projecting edges on the upper side after the crimps are drawn back. Ten seconds is sufficient to open the keg if done properly.

Departments of Technical Paint Service and Decoration. If you have some special problem of a technical nature that is not covered in this book address your inquiry to us and our Departments of Technical Paint Service and Decoration will give it prompt attention.

If you have some special problem in decorating or color selection to solve, please answer the questions and the requests for information that are listed below. This will aid our colorists in selecting suitable schemes of treatment for your specific problem which will be forwarded free of charge, together with samples of the colors recommended, and the formulas required to produce them.

The more information given regarding any problem, the more complete will be the answer concerning it. If blue prints or photographs of the exterior or interior in question are available, these should be forwarded.

Exterior

If you desire a color scheme for the exterior of a building, please give us the information requested below:

1. What is the building?
2. In what direction does it face?
3. Give approximate size of building including width, depth and number of stories.
4. Of what material are the outside walls constructed?
5. Are they painted, stained or natural and what is the present color?
6. Of what material is the roof composed?
7. Is it painted, stained or natural and what is the present color?
8. Describe approximate amount of trim, large, normal or small.
9. Are there window blinds?
10. If there are any gables or porches, state number and location.
11. If there is any foliage near the building is it plentiful or moderate?
12. What are the principal colors of neighboring buildings?
13. Have you any color preference?

Interior

If you desire color suggestions for the interior of a building, please give us the information requested below:

1. Name each room to be decorated—living room, dining room, bedroom, etc.
2. Give rough floor plan of rooms in building. State dimensions including height of ceiling.
3. Are the walls and ceilings of rough or smooth plaster?
4. What is the present color of the wood trim and will it be painted, stained or left natural?
5. Of what color and material is the floor and will it be painted, stained or left natural?
6. Describe color, size and location of fireplaces, wainscot, beams, panels, columns or other architectural details.
7. Describe materials of which floor coverings and furniture are composed, stating dominant color of each.
8. Have you any color preference?

CHAPTER VIII

Useful Information

A Watch as a Compass. Point the hour hand to the sun. The north and south line will pass thru the center of the watch dial and a point midway between the hour hand and the figure 12.

Finding Capacity of Tanks in Gallons. First step (all measurements to be in inches):

For rectangular tanks, multiply the length by the width by the depth.

For cylindrical tanks, multiply the length by the square of the diameter, and the result by .7854.

For tanks with elliptical cross section, multiply the length by the short diameter by the long diameter, by .0339.

Second step:

Divide the result by 231, which is the number of cubic inches in one gallon. The answer is the capacity of the tank in gallons.

Concrete Work. Concrete for walls or foundation work should be mixed 1 part Portland cement, 2 parts sharp sand and 6 parts washed gravel.

Finish coat for pavements, steps and other such work should be mixed 1 part Portland cement and 2 parts sharp sand or rough run limestone dust. Mix cement and sand dry, then mix with gravel dry and afterwards wet with the least quantity of water possible to saturate the mixture.

A bag of cement contains 94 pounds net. Four bags of Portland cement=1 barrel; 3 bags natural cement=1 barrel.

Capacity of Corn Cribs. The following table shows capacities of corn cribs 7½ feet in height. If not 7½ feet high, multiply by the given height and cut off right-hand figure. If the crib were only 7 feet high, it would hold (800x7)=560 (o. bu. etc.). The same space will hold 1 4/5 times as much grain as ear corn.

(Height, 7½ feet)

	Length	½	1	12	14	16	18	20
Width	6	13	27	320	373	427	480	533
	6¼	13	28	333	389	444	500	556
	6½	14	29	347	404	462	520	578
	6¾	15	30	360	420	480	540	600
	7	16	31	373	436	498	560	622
	7¼	16	32	387	451	516	580	644
	7½	17	33	400	467	533	600	667

	Length	22	24	28	32	36	48	64
Width	6	587	640	747	853	960	1280	1707
	6¼	611	667	778	889	1000	1333	1777
	6½	636	693	809	924	1040	1387	1849
	6¾	660	720	840	960	1080	1440	1920
	7	684	747	871	996	1120	1493	1991
	7¼	709	773	902	1031	1160	1547	2062
	7½	733	800	933	1067	1200	1600	2133

Familiar Facts. Doubling the diameter of a pipe increases its capacity four times.

A gallon of water (U. S. standard) weighs 8 1/3 pounds and contains 231 cubic inches.

A cubic foot of water contains 7½ gallons, 1,728 cubic inches, and weighs 62½ pounds.

To find the pressure in pounds per square inch of a column of water, multiply the height of the column in feet by .434.

At sea-level water boils at 212 degrees Fahrenheit. For each degree (Fahr.) less at which water boils estimate the elevation at 550 feet.

To find capacity of tanks any size: Given dimensions of a cylinder in inches, to find its capacity in U. S. gallons: Square the diameter, multiply by the length and by .0034.

Number of Tons of Coal a Bin Will Hold. Multiply the length, breadth and height (all in feet) together, and this product by 56 for anthracite, or by 50 for bituminous coal. Divide by 2,000 and the result will be the number of tons.

Square Box Measure (Approximate). A box 24x16 inches square and 14 inches deep will contain half a barrel.

A box 16 x 16¾ inches square and 8 inches deep will contain one bushel.

A box 12 x 11¼ inches square and 8 inches deep will contain half a bushel.

A box 8¼ x 8¼ inches square and 8 inches deep will contain a peck.

A box 4 x 4¼ inches square and 4 inches deep will contain one quart, dry measure.

Weights and Measures

Troy Weight

24 grains=1 dwt. 20 dwts=1 ounce
12 ounces 1 pound
Use for weighing gold, silver and jewels

Apothecaries' Weight

20 grains=1 scruple 8 drams=1 ounce
3 scruples=1 dram 12 ounces=1 pound
The ounce and pound in this are the same as in Troy weight.

Avoirdupois Weight

27 11.32 grains=1 dram 25 pounds=1 quarter
16 drams=1 ounce 4 quarters=1 cwt.
16 ounces=1 pound 2,000 lbs.=1 short ton
2,240 lbs.=1 long ton.

Dry Measure

2 pints=1 quart 4 pecks=1 bushel=
8 quarts=1 peck 1¼ cu. ft.
36 bushels=1 chaldron

Liquid Measure

2 teaspoons=1 dessert spoon
2 dessert spoons=1 tablespoon
8 tablespoons=1 gill

4 gills=1 pint 4 quarts=1 gallon
2 pints=1 quart 31½ gallons=1 barrel
2 barrels=1 hogshead
1 bbl. for oil or other liquid contains about 50 gallons

Time Measure

60 seconds=1 minute (30 days=1 month
60 minutes=1 hour in computing interest)
24 hours=1 day
7 days=1 week 52 weeks=1 year
28, 29, 30 or 31 days= 1 calendar month 365 days=1 year
366 days=1 leap year

Circular Measure

60 seconds=1 minute 90 degrees=1 quadrant
60 minutes=1 degree 4 quad'ts=12 signs, or
30 degrees=1 sign 360 degrees=1 circle

Long Measure

12 inches=1 foot 40 rods=1 furlong
3 feet=1 yard 8 furlongs=1 stat. mile
5½ yards=1 rod 3 miles=1 league

Cloth Measure

2¼ inches=1 nail — 4 nails=1 quarter
4 quarters=1 yard

Mariners' Measure

6 feet=1 fathom — 7½ cable lengths=
120 fathoms=1 cable length — 1 mile
5,280 feet=stat. mile
6,085 feet=1 naut. mile

Miscellaneous

3 inches=1 palm — 18 inches=1 cubit
4 inches=1 hand — 21.8 inches=1 Bible cubit
9 inches=1 span — 2½ ft.=1 military pace

Square Measure

144 sq. inches=1 sq. ft. — 40 sq.rods=1 rood
9 sq. feet=1 sq. yard — 4 roods=1 acre
30¼ sq. yards=1 sq. rod — 640 acres=1 sq. mile

Surveyors' Measure

7.92 inches=1 link — 160 square rods=1 acre
25 links=1 rod — 640 acres=1 square mile
4 rods=1 chain — 36 square miles—(6 mi. square)=1 township
10 square chains or

Cubic Measure

1,728 cu. in.=1 cu. ft. — 1 cu. ft.=about four-fifths of a bu.
27 cu. ft.=1 cu. yd. — 128 cu. ft.=1 cord (wood)
2,150.42 cu. in.=1 standard bushel
40 cu. ft.=1 ton (shpg.)

Mensuration, Length, Area and Volume

Length

Circumference of Circle=diameter×3.1416
Diameter of Circle=circumference×.3183
Side of Square of equal periphery as Circle=diameter ×.7854
Diameter of Circle of equal periphery as Square=side ×1.2732.
Side of an inscribed Square=diameter of Circle× .7071.
Length of arc=number of degrees×diameter×.008727
Circumference of Circle whose diameter is 1= 3,14159265
English statute miles=lineal feet×.00019
English statute miles=lineal yards×.00568

Area

Parallelogram=base×perpendicular height
Trapezoid=half the sum of the parallel sides×perpendicular height
Triangle=base×half perpendicular height
Circle=diameter square × .7854 or circumference square×07958
Sector of a Circle=length of arc×half radius
Segment of a Circle=area of sector of equal radius-triangle when segment is less, and+area of triangle when segment is greater than the semicircle
Side of square of equal area as Circle=diameter× 8862 or circumference .2821
Diameter of a Circle of equal area as Square=side× 1.1284
Diameter of Circle of equal area=square foot or area ×1.12837
Parabola=base×2-3 height
Ellipse=long diameter×short diameter×.7854
Regular Polygon=sum of sides×half perpendicular distance from center to sides
Cylinder=circumference×height+area of both ends
Sphere=diameter square×3.1416, or diameter×circumference
Segment of Sphere=height of segment×circumference of sphere of which it is a part×area of base
Pyramid of Cone=circumference of base×½ slant height×area of base
Frustrum of a Pyramid=sum of circumference at both ends×½ slant height+area of both ends
Convex Surface=square of a diameter of a sphere× 3.1416
Square feet=square inches×0.00695
One square foot=183.346 circular inches

Volume

Prism or cylinder=area of end×length
Sphere=cube of diameter×.5236
Side of an equal cube=diameter of sphere×.806
Length of an equal cylinder=diameter of sphere× .6667
Segment of sphere=(height squared+three times the square of radius of base)×(height×.5236)
Pyramid or cone=area of base×1/3 altitude
Frustrum of cone=multiply area of two ends together, extract the square root, add to this root the two areas and ×1/3 altitude
Cubic feet=cubic inches×0.00058
Cubic yards=cubic feet×0.03704
Cubic feet=cylindrical inches×0.0004546
Cubic yards=cylindrical feet×0.02909
Imperial gallons=cubic inches×0.003607
Imperial gallons=cubic feet×0.6232
Imperial gallons=cylindrical inches×0.002832
Imperial gallons=cylindrical feet×4.895
One cubic foot=2200 cylindrical inches
Cwt.=avoirdupois pound×.009
Ton=avoirdupois pound×0.00045

Metric Equivalents

Linear Measure

1 centimeter=0.3937 in. — 1 kilometer=0.62137 mi.
1 decimeter=3.937 in.=0.328 feet. — 1 in.=2.54 centimeters
1 ft.=3.048 decimeters
1 meter=39.37 in.=1.0936 yards — 1 yard=0.9144 meter
1 rod=0.5029 dekameter
1 dekameter=1.9884 rds. — 1 mi.=1.6093 kilometers

Square Measure

1 sq. centimeter=0.15550 sq. in. — 1 sq. inch=6.452 square centimeters
1 sq. decimeter=0.1076 sq. ft. — 1 sq. foot=9.2903 square decimeters
1 sq. meter=1.196 sq. yd. — 1 sq. yd.=0.8361 sq. m'r.
1 acre=3.954 sq. rd. — 1 sq. rd.=0.2529 acre
1 hektar=2.47 acres — 1 acre=0.4047 hektar
1 sq. kilometer=0.386 sq. mile — 1 sq. mile=2.59 sq. kilometers

Measure of Volume

1 cu. centimeter=0.061 cu. in. — 1 cu. in.=16.39 cu. centimeters
1 cu. decimeter=0.0353 cu. ft. — 1 cu. ft.=28.317 cu. decimeters
1 cu. mr. = 1.308 cu. yd. — 1 cu. yd.=0.7646 cu. m'r.
1 stere = 0.275 cd. — 1 cord=3.624 steres
1 liter= 0.908 qt. dry / 1.0567 qt. liq. — 1 qt. dry=1.101 liters
1 qt. liq.=0.9463 liter
1 dekaliter=2.6417 gals. — 1 gal.=0.3785 dekaliter
1 hekoliter=2.8375 bu. — 1 peck=0.881 dekaliter
1 bu.=0.3524 hektoliter

Weights

1 gram=0.03527 ounce — 1 ounce=28.35 grams
1 kilogram=2.2046 lbs. — 1 lb.=0.4536 kilogram
1 metric ton=1.1023 English tons — 1 English ton=0.9072 metric ton

Approximate Metric Equivalents

1 decimeter=4 inches
1 meter=1.1 yards
1 kilometer=⅝ of mile
1 hektar=2½ acres
1 stere or cu. meter= ¼ of a cord
1 liter= 1.06 qt. liquid / 0.9 qt. dry
1 hektoliter=2⅝ bu.
1 kilogram=2 1/5 bu.
1 metric ton=2,200 lbs.

For Your Files — A List of Products Manufactured by National Lead Company

White-Lead Products

Coach and Car Lead
Dry White-Lead
Dutch Boy White-Lead
Flake White
Pulp White-Lead

Lead Oxides

Battery Red-Lead
Dry Red-Lead
Dutch Boy Liquid Red-Lead
Dutch Boy Red-Lead
Litharge
Orange Mineral

Miscellaneous Pigments

Basic Lead Chromate
Basic Lead Sulphate, Blue
Basic Lead Sulphate, White
Leaded Zinc
Titanox

Linseed Products

Dutch Boy Linseed Oil
Dutch Boy Flatting Oil
Linseed Oil (raw, boiled, double-boiled and blown)
Linseed Cake
Linseed Meal

Colors

Colors-in-Japan
Colors-in-Oil
Dry Colors

Bearing Metal

Phoenix Bearing Metal
Heavy Pressure Bearing Metal
Genuine Babbitt Metal
No. 1 Journal Metal
Sterling Journal Metal
Perfection Anti-Friction Metal
Dutch Boy Bearing Metal
Special "Genuine" Bearing Metal

Solder

Acid-Core Solder, Dutch Boy
Capping Bars
Dutch Boy Solder
Fusible Wire Solder
Ingot Solder
Meter Bar Solder
Pig Solder
Pulverized Solder
Radiator Bar Solder
Ribbon Solder
Rosin-Core Solder, Dutch Boy
Segment Solder
Sheet Solder
Solder Drops
Solder Slabs
Solder Tape
Tinners' Bar Solder
Triangular Bar Solder
Wire Solder

Bearings

Armature Bearings
Bronze-Backed Babbitt Lined Bearings
Journal Bearings
Die-Cast Bearings

Sheet Metals

Sheet Lead (common, chemical, antimonial)
Britannia Metal No. 1
Bytanic Metal
Crawl Proof Sheet Lead
Frary (Ulco Brand) Sheet Metal
Hoyt Metal
Hoyt Silver
Impression Lead
Music Plates
Organ Pipe Metal
Sheet Tin
Stamping Metal
Tint Plates
White Copper Stamping Metal

Tubes and Tubing

Block Tin Tubing
Combination Tubing
Composition Tubing
Lead Tubes and Tubing

Hoyt Hardlead Products

Cornices
Elbows
Flashings
Goosenecks
Gutters
Leader Pipes
Ornamental Pipe Heads
Roofing
Valleys

Raw Metals and Alloys

Antimonial Lead
Babbitt Metal
Bar Tin
Battery Grid Metal
Brass and Bronze Ingot Metal
Casket Trimming Metal
Casting Alloys
Electrotype Metal
Hammer Metal
Hardening Lead
Linotype Metal
Magnus Metal Ingots
Monotype Metal
Needle Metal
Nickel-Bronze
Phosphor Tin
Pig Lead
Pig Tin
Pulverized Lead
Solders
Spelter
Stereotype Metal

Plumbing and Pipe Equipment

Block Tin Pipe
Brass Lined and Copper Lined Iron Pipe
Brass Trap Screws
Chemical Lead Pipe
Common Lead Pipe
Composition Lead Pipe
Combination Ferrules
Combination Lead and Brass Soldering Nipples
Flanged Bends
Frary Metal Pipe
Hard Lead Bends and Connections
Hard Lead Flanged Fittings
Hard Lead Plug Cocks
Hard Lead Valves
Leadamant Pipe
Lead Bends

Lead Lined Fittings
Lead Lined Iron Pipe
Lead Lined Soil Fittings
Lead Lined Soil Pipe
Lead Traps
Pipe Joint Cement
Tin Lined Fittings
Tin Lined Brass Pipe
Tin Lined Iron Pipe
Tin Lined Lead Pipe

Frary Metal (Ulco Brand) Products
Battery Parts
Bearings and Bushings
Pipe and Tubing
Pump Parts
Sheet Metal

Pressure Die Castings
Die-Cast Bearings
Die-Cast Products

Expansion Anchors
Cinch Anchor Expansion Bolts
Cinchette Double Expansion Anchors

Plastic Moulded Products
Bakelite Products
Condensite Products

Ammunition
US Cartridges
US Shot-shells

Other Products
Acetate of Lead, Brown
Acetate of Lead, White
Barium Sulphate
Blatchford Patented Base
Carbide
Castor Oil
Driers
Drying Machines
Flaxseed, Ground
Flaxseed Meal
Japan
Lead Hyposulphate
Putty
Tin Bars
Tin Wire
Turpentine

Combination Products
Lead Coated Steel Tubes
Lead Coated Steel Sheets
Lead Lined Acid Pails
Lead and Tin Lined Acid Valves
Lead Lined or Lead Covered Copper Coils
Lead Lined Tanks
Special Lead Lined Chemical Apparatus

Miscellaneous Lead Products
Babbitt Hammers
Battery Straps
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